

DICK SMITH ELECTRONICS CATALOGUE

1973/4

3rd Edition



50_{CENTS}

Dear Customer,

This catalogue heralds a real breakthrough in the electronic supplies business. Such has been the enthusiasm for our mail order and over-the-counter services that the business has been undergoing a major expansion.

Following my recent overseas trip, our premises at Gore Hill have been completely rebuilt with an extra 5000sq ft of floor space. We now have the largest self-service area in NSW and a streamlined mail order department to speed your orders to you.

We notice from your letters that regular customers are buying from us because we only stock good quality components. Very cheap and unbranded goods usually only give trouble. We have attempted to choose items that give the best value for money. In the long run an extra couple of dollars spent on something costing over \$100 for example is amply rewarded with greater satisfaction and reliability. Also by buying in large quantities we can often supply better components at comparable prices.

I would like to thank all our many suppliers who helped us compile the information sections of the catalogue. Whether you buy from us or not, keep the catalogue just for the multitude of information it contains:

Fantastic IC section gives all circuit information and parameters plus suggested circuits.

Cross reference on Transistors we know you liked the data in our last transistor section. It's all here again plus a detailed equivalents list.

Tax Free Price List as a service to export orders, government departments, professional users etc. we can supply a special 'tax-free' price list (see opposite).

Special Newsletter we introduced this when the component pinch started to be felt. It produced an overwhelming response and is the fastest way we have to keep you up to date. There's no obligation - it's just another attempt to help you.

We get a lot of letters from disappointed customers, so can I end with two desperate PLEASES? Do them both and we'll try our hardest to please you.

PLEASE read the ordering procedures section and use the order form in the centre of the catalogue.

PLEASE print your name and address.

Now once again it's over to you!

Dick Smith
VK2ZIP



PROCEDURES FOR PURCHASING

Immediate Despatch

24 hour S.T.D. orders taken

Everything new — no rejects or seconds

Fully guaranteed

PAYMENTS Postal orders, money orders, telegraphic order or crossed cheque to be sent with order except for Government or semi-government departments, educational establishments and public companies. Unfortunately our limited resources prevent us from opening general 30-day trading accounts.

C.O.D. ORDERS Goods may be purchased C.O.D. but please remember it costs an extra 75c PMG charge on top of normal post and packing charge. C.O.D. goods can only be sent by mail.

OTHER METHODS OF DESPATCH Where goods are requested to be sent by Air Mail, Road Freight or any other means, the additional cost is payable by the customer.

POSTAGE The postage and packing amount is usually listed with the goods. When not mentioned a standard charge of 30c applies. Any overpayment of P & P will be credited immediately. Please note that P & P charges include the high cost of packing material and labour, not just the amount of postage.

REGISTRATION AND INSURANCE Goods may be registered and insured for a cost of 50c per \$100 value of goods. Where insurance is not specified, goods are sent at customer's risk.

ROAD FREIGHT Goods too heavy or bulky to be despatched by mail will be sent by Road Freight.

DESPATCH OF ORDER All goods in stock are despatched on the day we receive your order. Goods not in stock are back ordered for one month maximum unless we are advised otherwise. All back orders are despatched the day we receive goods from our supplier. Back order delay times will be quoted when we send a copy of your order back to you (see order form). We cannot guarantee their accuracy.

ENQUIRIES AND TECHNICAL INFORMATION All enquiries related to goods in this catalogue will be answered if they are accompanied by a stamped addressed envelope. However we cannot help with technical information beyond the data which is available on most products at a cost of 10c post free with your order or send a stamped addressed envelope.

SALES TAX Where applicable sales tax is included. If goods are to be re-sold, a sales tax number must be quoted. A special price list is available on request giving tax-free prices on most of our lines. All sales tax free orders must be accompanied by an official order or sales tax exemption form or be directly exported by us. Otherwise goods will be charged at tax-inclusive prices.

PRICES All prices include all applicable discounts and are subject to variation without notice. If prices vary, the new price will be shown on your delivery advice and a debit or credit issued. You may return the goods for full credit under the terms of our guarantee if you are not satisfied.

ORDER FORMS To speed your delivery we have introduced a pre-printed Order Form. All orders on this form receive preferential 'speed' treatment. Extra forms are available free of charge.

SATISFACTION GUARANTEE If for any reason you are not satisfied with your purchase return it to us within 14 days of despatch in the original carton and we will exchange it or return your money (less transportation charges). Goods returned must be unmarked and in the exact condition as supplied. This policy does not apply to kits, electronic components (i.e. valves, transistors, capacitors, resistors etc.) nor to books, pre-recorded tapes or any goods ordered in specially.

MANUFACTURER'S GUARANTEE All goods supplied are brand new and therefore any guarantee given by the manufacturer is fully valid.

S.T.D. PHONE ORDERS A one minute S.T.D. 'phone call to us from anywhere in Australia costs less than 50 cents after 6.00 p.m. in the evening. So that our customers may benefit from this cheaper rate we have installed an automatic telephone answering and recording machine. Simply dial our S.T.D. number and place your order. (1 minute is normally ample). It will be despatched C.O.D. to you the next morning.

ENQUIRIES ON ORDERS If you wish to enquire in any way about an order **FULL DETAILS MUST BE GIVEN**. These include date of posting order, name address and postcode given, approximate list of parts ordered, and any mail order/cash sale/ invoice numbers.

If the above is not given we have no way of checking on your order.

DICK SMITH (WHOLESALE) CO.

160 Pacific Highway, Gore Hill 2065 N.S.W. Phone: 439 5311 (5 lines)
STD Phone Orders 02-439 5344

Catalogue written and produced by Rob Cooper and Dick Smith.
Composer typesetting by "CopyBook" (85-2723) of Sydney
recommended for their patience and spelling.

How have we grown so fast?

LOW PRICES? Certainly we keep our prices down, but not so low that quality and reliability start to suffer. We know our customers come back to us because they are looking for value rather than the cheapest in town. A few extra dollars on a kit worth a \$100 is amply rewarded in the long run.

SPECIALISATION? Everyone in our business is an enthusiast and just as keen on electronics as you are. They know all about what they are selling and will help as much as they can. We always build prototypes of our Superkits before selling them and the helpful tips we enclose are based on our experience. They often make the difference between the circuit working or not.

RELIABILITY? Both in the company and the products we sell. That is why we can back products in this catalogue with our money-back satisfaction guarantee.

QUALITY? We have made it a rule never to stock manufacturer's surplus or second-hand equipment or parts. Everything is fresh from the factory and value for money. That is another reason why it is guaranteed.

AVAILABILITY? We only supply items we can get from reliable suppliers. We also try to have a second source in case things go wrong. At the time of writing, there is a world-wide components shortage which is beyond our control, so some common items are in very short supply.

INGENUITY? We get a lot of letters and pats on the back for getting people out of strife. We hate to see a disappointed customer. The items we stock are all fast movers (or we clear them before they stop). In that way we don't tie vast amounts of money up in expensive stock.

SERVICE? We get the occasional compliment, and the rude letter. Being enthusiasts we are always anxious to learn something new that will help us improve. We want you to do business the easiest way possible with us.

AGE? Rather the lack of it! We have not been around for 50 years, but neither are we young upstarts. Being only five years old we are still small enough to give you friendly efficient service.

COMET

FOR DOOR-TO-DOOR SERVICE

We can now offer an extremely fast delivery service to virtually any part of Australia by Australia's most reliable carrying service "Comet".

If you require your goods quickly simply tick the appropriate box on the order form (Comet Road or Comet Air), estimate the packing and freight amount from the chart below and include with your remittance.

Note: No C.O.D. service is available.

Rates given include an allowance (put on by us) for packing - standard "Comet" rates are lower.



ROAD EXPRESS

Area	Delivery Time Taken	Packing & Freight Charge (Small parcel up to 2KG)	Approx. Cost for Each Additional K.G. (Packing & Freight)
Sydney Metrop.	A.M. next day	\$1.50	\$0.10c
N.S.W. Country	A.M. next day	2.00	.20c
Brisbane Met.	A.M. next day	3.00	.25c
Qld. Country	A.M. 3rd day	3.40	.45c
Melbourne Met.	A.M. next day	3.00	.25c
Vic. Country	A.M. 3rd day	3.40	.45c
Adelaide Met.	A.M. 2nd day	3.50	.45c
S.A. Country	A.M. 2nd day	3.75	.60c
Perth Metrop.	A.M. 5th day	4.00	.75c
W.A. Country	A.M. 7th day	4.50	.95c
Tasmania	A.M. 2nd day	3.50	.45c
N. Territory	A.M. 4th day	4.50	.95c

URGENT ORDERS - By Comet Express or Air.

We suggest you phone your order direct to our mail order department (439 5344) and check availability and then telegram remittance to St. Leonards Post Office - we will despatch goods immediately and you should have them the next day.

For insurance add 50c per \$100.00 value



COMET AIR

A really fantastic service - door to door delivery of small parcels overnight to all mainland capitals - just think, if you live in Darwin and we despatch your order today, you will receive it tomorrow - That's Quick!

Area	Delivery Time Taken	Packing & Freight Charge (Small parcel up to 2KG)	Approx. Cost for Each Additional K.G. (Packing & Freight)
Melbourne	A.M. next day	\$2.50	\$0.30c
Brisbane	A.M. next day	2.50	.30c
Adelaide	A.M. next day	2.50	.50c
Canberra	A.M. next day	2.00	.30c
Darwin	A.M. next day	3.50	2.00
Perth	A.M. next day	3.00	1.70



SUPPLIERS NAMES AND ADDRESSES The following suppliers provided support in the compilation of this catalogue. For large quantity orders and re-selling arrangements, please contact them direct. And please mention that you saw their products in the Dick Smith Catalogue - if you give them support, then perhaps they'll help us to make the next edition even bigger and better!

Adcola Products Pty. Ltd.,
22 Firth Street,
Doncaster...Victoria...3108.
Applied Technology Pty. Ltd.,
25 Spring Street,
Chatswood...N.S.W....2067
Associated Services Pty. Ltd.,
110 Tynte Street,
North Adelaide...S.A....5006.
Astronics Australasia Pty. Ltd.,
118 Clarence Street,
Sydney...N.S.W....2000.
Australian General Electric Limited,
86-90 Bay Street,
Ultimo...N.S.W....2007.
Amalgamated Wireless (Australasia) Ltd.,
P.O. Box 24,
Ashfield...N.S.W....2131.
Cema (Distributors) Pty. Ltd.,
P.O. Box 578,
Crows Nest...N.S.W....2065.
Circuit Components (A/asia) Pty. Ltd.,
P.O. Box 70,
Bexley...N.S.W....2207.

John Carr & Company Pty. Ltd.,
P.O. Box 39,
Haymarket...N.S.W....2000.
Expo International Pty. Ltd.,
20 Meeks Road,
Marrickville...N.S.W....2204.
E.M.I. (Australia) Limited,
P.O. Box 352,
Haymarket...N.S.W....2000.
Fuller Tool Company
22 Canterbury Road,
Bankstown...N.S.W....2200.
Vic Furnari,
Box 5120, G.P.O.,
Sydney...N.S.W....2001
Ferguson Transformers Pty. Ltd.,
P.O. Box 301,
Chatswood...N.S.W....2067.
General Electronic Services Pty. Ltd.,
114 Alexander Street,
Crows Nest...N.S.W....2065.
Goldring Sales & Service (N.S.W.) Pty. Ltd.,
P.O. Box 352,
Mascot...N.S.W....2020.

Greendale Engineering & Cables Pty. Ltd.,
196 Silverwater Road,
Silverwater...N.S.W....2141.
Indeva Pty. Limited,
24 Bellevue Road,
Bellevue Hill...N.S.W....2023.
I.R.H. Components Pty. Ltd.,
P.O. Box 71,
Kingsgrove...N.S.W....2208.
Jacoby, Mitchell, Limited,
P.O. Box 2009,
North Parramatta...N.S.W....2151.
F. C. Lovelock Pty. Limited,
P.O. Box 40,
Broadway...N.S.W....2007.
Maganavox Australia Pty. Ltd.,
Box 3567, G.P.O.,
Sydney...N.S.W....2001.
McMurdo (Australia) Pty. Ltd.,
P.O. Box 321,
Clayton...Victoria...3168.

Multibrand Pty. Limited,
2 Paton Place,
Balgownie...N.S.W....2060.
NS Electronics Pty. Ltd.,
P.O. Box 89,
Bayswater...Victoria...3103.
Nidac,
P.O. Box 137,
Burwood...Victoria...3125.
Paradio Electronics Export Co.,
P.O. Box 380,
Darlinghurst...N.S.W....2010.
Plessey Rola Pty. Ltd.,
P.O. Box 5,
Richmond...Victoria...3121.
Plessey Ducon Pty. Limited,
P.O. Box 2,
Villawood...N.S.W....2163.
Parameters Pty. Ltd.,
53 Governor Road,
Mordialloc...Victoria...3195.
Royston Electronics Pty. Limited,
22 Firth Street,
Doncaster...Victoria...3108.
E. S. Rubin & Co. Pty. Ltd.,
P.O. Box 82,
Artarmon...N.S.W....2064.
Scalar Industries Pty. Ltd.,
18 Shelley Avenue,
Kilsyth...Victoria...3137.

Simon & Company (Photographic) Pty. Ltd.,
58 Margaret Street,
Sydney...N.S.W....2000.
Tangent Electronic Sales Co.,
P.O. Box 115,
Bentleigh...Victoria...3201.
Techno Electronics,
Carrington Road,
Warrackville...N.S.W....2204.
Warburton Franki (Sydney) Pty. Ltd.,
P.O. Box 394,
Auburn...N.S.W....2144.
Martin Wayne Pty. Limited,
P.O. Box 392,
Crows Nest...N.S.W....2065.
Wonder Wood Pty. Limited,
Box 548, G.P.O.,
Sydney...N.S.W....2001.
Weston Electronics Company,
375 Eastern Valley Way,
Roseville...N.S.W....2069.
Zaphyr Products,
70 Battersford Road,
Chadstone...Victoria...3148.

SPECIALS!

The following specials are genuine brand new stock sold at nil or extremely low margins to help you, the electronic hobbyist, indulge in your hobby to a greater extent. They are only available while stocks last. (We estimate 3-4 weeks) When ordering from this 'Special' list please write 'Special' after your order otherwise goods will be sold at the normal price.

Spark Plug Suppressors
Mount directly on To the spark plug reduce ignition noise in car radio's stereo's.
Normal price 90c each Special 25c or 10 for \$2.20

Car radio suppressor capacitors
5mf capacitor designed to mount alternator, generator or coil, device in the vehicle causing noise. Normally 85c each Now 30c each 10 for \$2.50

CHANCE OF A LIFETIME
"Anodeon" brand new tubular capacitors - trade price is from 16 to 36c each for the made products. Buy now for 4c each in bulk. Ideal for TV servicemen and amateurs not oddment packs where capacitors supplied are value - 1 they have been counted and are in each pack we o values.

n12,

low \$2.80

MPF121
A popular dual gate m price - buy now brand new by Motr 75c each or 10

EM402 diode
-17

Dear Customer,

DICK SMITH NEWSLETTER OFFER

A recent innovation, the Newsletter keeps you bang up to date on additions to the catalogue. Our first mailing was an overwhelming success producing handfuls of thank-you letters. Like the catalogue it meets a long-felt need. Details of parts, kits, boards etc. for projects, new books, price changes etc. The most popular section, naturally is the one titled 'Specials' which is full of bits and pieces we want to clear at ridiculous prices. By subscribing to the Newsletter you get the information well before our advertisements appear thereby saving yourself possible disappointment.

NOW YOU HAVE GOT A CATALOGUE, KEEP IT UP TO DATE BY GETTING ON OUR NEWSLETTER LIST

Simply order from us regularly (at least every 6 months) - even one resistor will keep you on the list! And use the order form printed in the centre of the catalogue. If you move please tell us your new and old addresses. Returned mail costs us money and in the long run you end up paying for this waste.

(See review in March EA)
High quality at low cost this amplifier kit has sold extremely well - beautifully presented with explicit instructions. It is ideal for the beginner and the expert alike. Every part is supplied except a case and transformer.
\$27.50 P & P 75c
Fully built and tested \$32.50
Transformer P & P 50c \$4.75

Parts pinch begins to hurt

Dick Smith's Newsletter

As these capacitors are the huge import surcharge only 100 packs available. A total of 190 capacitors for ridiculously low price of \$6. miniature L.E.D. red colour 2.2 volt @ 20mA 2 watt resistors
yard new 100 818 5% type, all perfect
lues from 100 ohms to 820K,
sally 22c each Now 10c each

NEW PRODUCTS
Our product range is always i. as we closely follow the const articles in EA and ETI and stock accordingly.
McMurdo
FTI feedthroughs (pack of 250) \$5.50
Interconnection lead kit (25) \$3.40
Relay
UBN miniature 12V coil
ngle change over contacts -

PARTS SHORTAGE: A SUPPLIER'S VIEWPOINT
By NEVILLE WILLIAMS
The parts shortage is a problem that is affecting many of us. It is a problem that is not only affecting the hobbyist but also the professional. The parts shortage is a problem that is not only affecting the hobbyist but also the professional. The parts shortage is a problem that is not only affecting the hobbyist but also the professional.

HI-FI EQUIPMENT

For best quality at a fair price, we recommend the range of "Expo" equipment. These products are designed and manufactured by one of Japan's largest companies and they offer extreme reliability with excellent hi-fi tonal performance.



EXPO MODEL KA205 24 Watts Peak

An extremely attractive amplifier unit with neat styling and big performance. The KA205 is ideal for the beginner or for use as a second hi-fi system in the smaller room. Full transistor performance gives excellent response with full tonal range. Inputs for magnetic, ceramic and crystal cartridges. Triple diffused mesa type silicon output transistors are used in conjunction with epitaxial planar type. The unit is housed in a deluxe walnut cabinet with metal front panel and five in-line metal knobs.

Inputs : Recorder, tuner, tape, radio
Output Impedance : 4 to 15 ohms
Power : 12 Watts R.M.S. (2x6 watts)
Aux. : Output for tape recorder
Controls : Power on/off, balance, volume, treble, bass, function mode.

KA205 \$65.00 P&P \$2.00

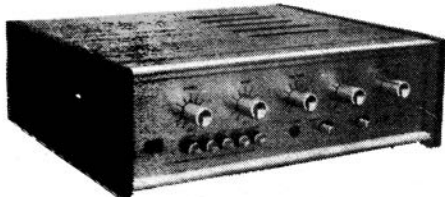


EXPO MODEL TA3100 50 Watts Peak

The Expo TA3100 is a high class stereo hi-fi amplifier which incorporates ITL (input transformerless) and OTL (output transformerless) 20 transistor circuit that reproduces extremely natural sound with minimum distortion over an extremely wide range of the audio spectrum. Features include operation of magnetic, crystal or ceramic cartridges, scratch filter and stereo headphone jack as well as provision to use with radio tuner and tape recorder. Finish of the amplifier is in hand rubbed walnut.

Power Output : 25 Watts RMS (2x12.5)
Freq. Response : 20-40,000 Hertz
Output : 4 to 15 ohms
Input : Magnetic 3mV
Ceramic/crystal 100mV
Tuner and tape 200mV
Signal to Noise : Better than -60db
Colour : Hand rubbed walnut
Dimensions : 13"W x 3 7/8"H x 8 5/8"D

TA3100 \$89.00 P&P \$2.00



MODEL KA410 100 Watts Peak

A truly fine performing amplifier in the highest class available at outstanding value. Full fidelity sound in thrilling stereo. The amplifier has power to spare . . . 50 watts RMS (100 watts peak) will drive more than one speaker system . . . fill any room with clean wall to wall sound. A full complement of front panel tone controls (bass, treble, volume, balance, loudness, scratch filter, rumble filter) enable the KA410 to be tailored to the acoustic characteristics of the room and to match the sound characteristics of virtually any record player, cartridge tape player or speaker system. The circuit features 24 transistors OTL output and ITL input circuitry. Stereo headphone jack as well as provision for use with radio tuner and tape recorder.

Power : 50 watts RMS (2x25)
Impedance : 4 to 15 ohms
Freq. Response : 20-40,000 Hertz
Input : Magnetic 3mV RIAA
Ceramic/crystal 100mV
Tuner 200mV
Tape 200 mV
Signal to Noise : Better than -60db
Colour : Hand rubbed walnut
Dimensions : 13"W x 3 7/8"H x 10 5/8"D

KA410 \$115.00 P&P \$2.00



EXPO

EXPO SPEAKERS

620 2-way speaker system is a budget priced speaker giving a rich bass and good treble response and capable of handling 15Watt. Styling is contemporary, hand-rubbed Teak with attractive grill cloth. **\$ 26.00 each (P&P Road freight extra)**

TS2020 3-way, 3-speaker system is a wonderfully compact 35Watt high quality system consisting of an 8" woofer, a unique 3" cone tweeter and a 3" tweeter which provides a pure, uncoloured high frequency response. The speaker features a resettable overload protection circuit and has built-in bass and treble control for individual room adjustment.

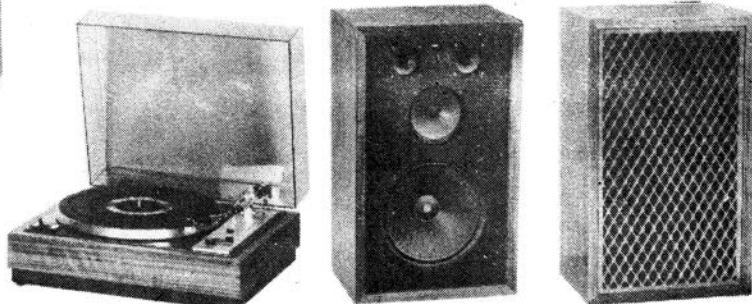
Specifications
Enclosure : Air suspension type
Speaker impedance : 8ohm
Frequency response : 35 - 20000Hz
Dimensions : 18.5/8" H x 12" W x 9" D
Weight : 22 lb

TS2020 Speaker System \$ 79.00 each (P&P Road freight extra)

HFS400 4-speaker system is beautifully finished in hand-rubbed Teak and designed to give concert hall realism. Huge 12" woofer, 6 1/2" mid range and two 3" tweeters. Quality is comparable with speakers costing twice as much and the power handling would be ideal for the Opera House.

Specifications
Speaker impedance : 8ohm
Frequency response : 30 - 25000Hz
Power Handling : 45Watt
Dimensions : 26" H x 16" W x 12" D
Weight : 28 lb

HFS400 Speaker System \$ 98.00 each (P&P Road freight extra)

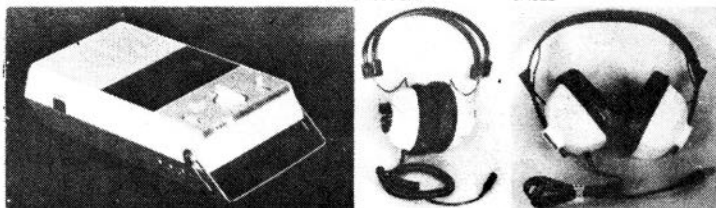


▲ BRU122 BELT DRIVE SEMI-AUTOMATIC TURNTABLE Is a magnificent piece of engineering at a truly economical price. The platter is a balanced 4lb of aluminium driven by a 4-pole synchronous motor and giving speeds of 33.1/3 and 45rpm. Lightweight arm has a detachable head shell and hydraulic cueing device. We supply it complete with a high quality magnetic cartridge and diamond stylus. The whole thing is mounted in a hand-rubbed Teak base with hinged perspex lid. Just work out the cost of the individual items. **\$119.00 (P&P Road freight extra)**

SA32D Headphones are ideal for all stereo systems and low power amplifiers. Extremely light weight for many hours of effortless concert listening. Frequency response from 25 - 18000Hz, 300mW rating. Supplied with cord and plug. **\$ 5.95 (P&P 30c)**

SH850GX Headphones are a high-power de-luxe model with independent slider volume controls for individual ear adjustment. 500mW rating. The whole emphasis in the design has been on comfort so that listening is a real pleasure for hours on end. Frequency response from 20 - 18500Hz. Supplied with cord and stereo plug. **\$10.95 (P&P 50c)**

AD38LS is a professional type headset with heavy padding and ultra-comfortable for Opera fans who don't want to take intervals. Get the acoustics exactly right because this time you've got volume AND tone sliders plus a stereo/mono switch. Beautifully finished with stitched ear cushions and headband. Supplied complete with heavy duty cord and plug. Frequency response 20-20000Hz. **\$14.95 (P&P 50c)**



AC/DC CASSETTE RECORDER MODEL 8275 Has thousands of possible uses - parties, letters, in the car - what you will! Records music or voice on 2-track standard cassettes, also plays back pre-recorded tapes. No threading, simple master control for all functions. Supplied complete with microphone, remote control switch and spare cassette. Operates from standard batteries or 240V AC supply (cord and plug provided). **\$ 37.70 (P&P \$1.00)**

SCD77X CASSETTE DECK is extremely popular because of its slider level controls and price! Ideal for connecting into your existing stereo using the lead supplied. Push-button, fool-proof controls with recording level meter and tape counter built-in. Safety switch prevents accidental erasure, twin microphones. A real beauty! Suits all Philips type cassettes.

Specifications
Frequency response : 45 - 12000Hz
Signal/Noise : Better than 35db
Distortion : Better than 3%
Channel separation : 30db minimum
Inputs : 2 microphone and 2 High level
Wow and Flutter : Less than 0.3%
Output : up to 2.5V
Speed : 1.7/8 ips

SCD77X Cassette deck \$119.00 (P&P Road freight extra)

Pioneer have chosen the sure and sensible way of starting you off in stereo. Start with a basic unit and add to it until you get the system you want. Almost everything in their range can be interconnected. We have 'ear' selected the following equipment from the vast Pioneer range because it is the most popular. However we can also supply details and prices of their other equipment.

We have been forced to limit specifications because of space. Full details are available from our Technical Information Service.

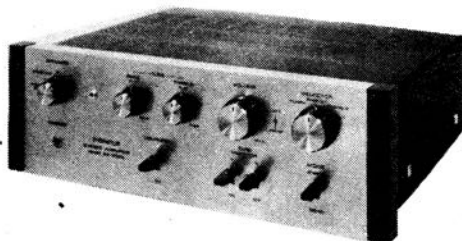
AMPLIFIERS

SA-500 Is a versatile, budget priced solid state amplifier with a musical power of 44W. Uses low noise silicon transistors for excellent signal/noise and distortion. Individual bass and treble controls are set at 3 db steps for precise adjustment. Extremely popular, our best seller.

Music Power	: 44W into 4ohm (36W into 8ohm)
Frequency response	: 20-50000Hz $\pm$ 1db
Power bandwidth	: 20-40000Hz (Distortion 0.5% IHF)
Harmonic Distortion	: Better than 0.5% at 1kHz, rated output
Inputs	: Phono, Mag, Tuner, Tape, Aux, DINjack.
Dimensions	: 13" W x 4.5/8" H x 12 1/4" D
Weight	: 13lb 3oz

SA500A Amplifier

\$139.00 (P&P \$2.00)



SA6200 INTEGRATED AMPLIFIER WITH PRECISE EQUALISER A versatile amplifier at a very reasonable price. The equaliser in the pre-amp has numerous error correcting components before the two stage feedback control section. RIAA curves followed to $\pm$ 0.5db for highest fidelity. Power output is 15W per channel (IHF) into 8ohms, with a response from 20-20000Hz.

Power	: 15W into 8ohm or 4ohm
Frequency response	: 20-30000Hz $\pm$ 1db (RIAA better than $\pm$ 0.5db)
Harmonic Distortion	: Better than 0.2% at 1kHz, rated output
Inputs	: Phono, Mag, Tuner, Tape, Aux, DINjack
Dimensions	: 16.3/8" W x 5 1/4" H x 13" D
Weight	: 17lb 14oz

SA6200 Amplifier

\$197.00 (P&P Road Free)

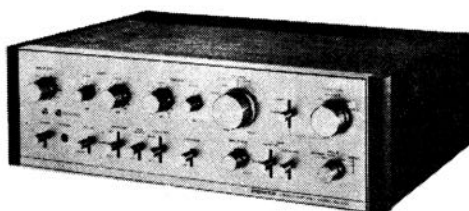


SA9100 AMPLIFIER WITH DIRECT-COUPLED POWER AMP Features extraordinary stability throughout by using a plus-minus split power supply design with differential amps in the first stage equalisers. RIAA equalisation is better than $\pm$ 0.2db and signal/noise, distortion and dynamic margin are greatly improved. Complex spectrum adjustments possible with sub-tone controls. Factory proved specification gives 60W min per channel. Highest possible standard reproduction.

Power	: 60Watt into 8ohm (75W into 4ohm)
Frequency Response	: 7Hz to 80kHz $\pm$ 0-1db
Harmonic distortion	: Better than 0.1% at rated output
Inputs	: Phono, Mag, Tuner, Tape, Aux, DINjack
Dimensions	: 17" W x 5 1/2" H x 13 1/2" D
Weight	: 30lb

SA9100 Amplifier

\$539.00 (P&P Road Free)



PL15C BELT-DRIVE STEREO TURNTABLE A quality, low-priced turn-table with a variety of features. Has a synchronous motor for virtually noiseless operation, oil-damped tonearm elevator and reliable belt-drive. Features automatic return: after record has played tonearm returns to rest and power shuts off automatically. Includes moving magnet type cartridge with diamond stylus.

Motor	: 4-pole synchronous motor
Turntable Platter	: 12-inch aluminum alloy die-cast
Speed	: 45 and 33.1/3 rpm
Wow and Flutter	: Less than 0.1% (WRMS)
Frequency Response	: 15-20000Hz
Cartridge Type	: Moving magnet type (PC-11)
Channel separation	: 30db at 1000Hz
Output	: 5mV into 10000ohm
Stylus pressure	: 2-3gm
Dimensions	: 17" W x 6" H x 13 1/2" D
Weight	: 13lb 6oz

PL15C Turntable

\$154.00 (P&P Road Free)



PL12E BELT-DRIVE STEREO TURNTABLE A simply operated turntable with many important features for distortion-free music reproduction. Has synchronous motor, reliable belt-drive to drive the big 12-inch aluminum turntable, and includes moving magnet type cartridge with diamond stylus. Two-position switch raises and lowers tonearm. Distinctive styling.

Motor	: 4-pole synchronous motor
Turntable Platter	: 12-inch aluminum alloy die-cast
Speeds	: 45 and 33.1/3 rpm
Wow and Flutter	: Less than 0.12% (WRMS)
Frequency Response	: 15-20000Hz
Cartridge Type	: Moving magnet type (PC-11)
Channel separation	: 30db at 1000Hz
Output	: 5mV into 10000ohm
Stylus pressure	: 2-3gm
Dimensions	: 17" W x 6" H x 13 1/2" D
Weight	: 13lb 6oz

PL12E Turntable

\$124.00 (P&P Road \$2.00)



PL61 PROFESSIONAL TURNTABLE WITH DC SERVO CONTROLLED HALL MOTOR The space age motor in this turntable is an ultra-slow speed brushless type giving wow and flutter better than 0.05% with a signal/noise ratio better than 55db. The Hall motor has less mechanical and electrical noise, longer life etc. Speed change is achieved electronically. S-shape tone arm built in with magnetic anti-skate and special low C cable for 4-channel disc reproduction.

Motor	: Brushless DC servo Hall Motor
Turntable platter	: 12 1/4" aluminium alloy die-cast
Speed	: 45 and 33.1/3 rpm
Wow and Flutter	: Less than 0.05%
Frequency Response	: 10-25000Hz
Cartridge Type	: Induced Magnet (PC50)
Channel Separation	: Better than 25db
Output	: 3mV into 50000ohm
Stylus pressure	: 1.5 - 2gm
Dimensions	: 20" W x 8" H x 16.7/8" D
Weight	: 24lb 4oz

\$370.00 (Insured, Roadfreight Free)



SPEAKERS

CS40 2-way, 2-speaker is equipped with a 10" woofer and 3.5/8" cone type tweeter capable of handling up to 30W of music power. Handsomely designed for floor or shelf mounting.

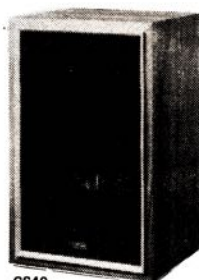
Frequency Response	: 50-20000Hz
Impedance	: 8ohm
Dimensions	: 23" W x 22 1/2" H x 11" D
Weight	: 19 1/2 lb

CS40 Speaker \$69.50 each (P&P \$2.00)

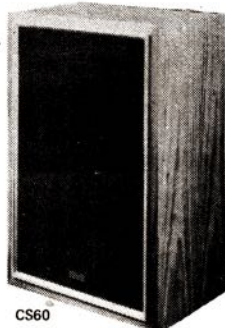
CS60 3-way, 3-speaker is equipped with a big 12" woofer, 5" mid range and 3" cone tweeter capable of handling up to 60W of music power. Looks well in oiled walnut cabinet with glossy trim.

Frequency Response	: 40-20000Hz
Impedance	: 8ohm
Dimensions	: 16 1/2" W x 25" H x 11 1/2" D
Weight	: 39 lb

CS60 Speaker \$127.00 each (P&P \$2.00)



CS40



CS60

CSR700 3-way, 3-speaker features a new look in speaker cabinet design to blend with modern decor and new technology in cone design to give better transient response. 12" Bass woofer with very low distortion, horn mid-range and multi-cellular horn tweeter.

Frequency Response	: 35-20000Hz
Impedance	: 8ohm
Power Handling	: 75Watt
Dimensions	: 15" W x 26" H x 13.5/8" D
Weight	: 50 lb

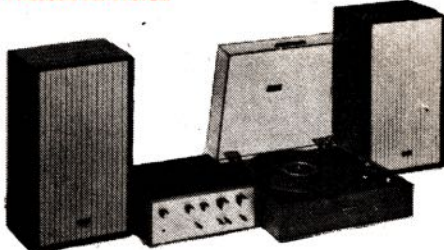
CSR 700 Speaker

\$208.00 each (P&P \$2.00)

CSR 700



PRELUDE 500 SYSTEM



SUGGESTED COMPLETE SYSTEMS We hesitate to make recommendations since almost any combination of Pioneer equipment can be used. However experience suggests the following:

	Amp	Turntable	Speakers
System A	SA500A	PL12E	2x CS40
System B	SA6200	PL15C	2x CS60
System C	SA9100	PL61	2x CSR700



*Country enthusiasts especially note that we transport this gear by Road Freight, insured as Fragile by US so there is no need to worry about anything.

PRELUDE 500 SYSTEM Extremely popular and extensively advertised. Many thousands of Australians have chosen this one. Consists of a SA500A amplifier, two speakers (6 1/2" response 50-20000Hz) and a 12" belt drive turntable complete with base, cartridge and lid. Full pamphlet available

\$229.00 (P&P Road \$5.00)

E100A SYSTEM Offers a slightly higher quality and performance. Uses a newly developed tuner/amplifier giving 30W output, belt drive turntable and similar speaker to Prelude 500. Send for pamphlet

\$399.00 (P&P \$5.00)

AS200 SPEAKER KIT A do-it-yourself kit for a custom 8", 2-way, 2-speaker system. Comes complete with cabinet instructions and crossover network. (Cabinet measures 11"W x 21"H x 9"D)

Impedance	: 8ohm
Frequency Response	: 40-20000Hz
Power Handling	: 25Watt

\$31.85 each (P&P \$2.00)



CT4141 DOLBY CASSETTE SYSTEM (Reviewed in Electronics Today Feb 73) This is a professional quality cassette recorder using an electronically controlled DC motor, solid ferrite heads capable of playing normal or chrome dioxide tapes. Wow and flutter at 0.13% is the lowest of any deck to date. Frequency response using CrO tapes is from 30-16000Hz with the Dolby system eliminating hiss and noise without upsetting the tone. Takes all Compact cassettes. Sig/Noise 58db with Dolby. Numerous other features described in pamphlet.

Dimensions	: 16" W x 3.3/8" H x 9 1/2" D
Weight	: 11 lb 4oz

\$315.00 (Insured, Roadfreight Free)

HEADPHONES

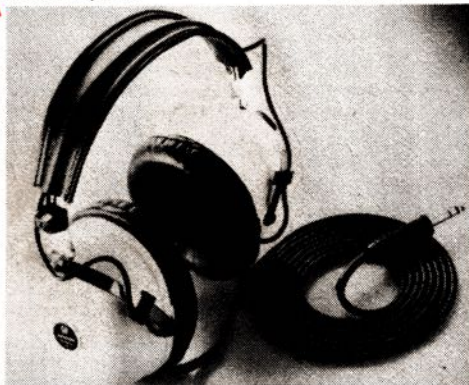
SE20A STEREO HEADPHONES Virtually distortion-free sound is possible from this budget-priced Pioneer headphone set which has a wide frequency response and features usually found only on far more expensive models. The set gives volumes equal to actual concert hall performances with extremely low amplifier or receiver power. It may be used with any stereo system with rated impedance of 4-16 ohms. Styling and shape of the set reflects the finest of human engineering - its lightweight permits long hours of musical enjoyment without fatigue.

Matching Impedance	: 4-16 ohms
Maximum Input Power	: 2V (each channel)
Frequency Range	: 20-18000Hz
Weight	: 13oz (without connecting cable)
Connecting Cable	: 8 feet

SE20A Headphones

\$15.00 (P&P \$1.00)

SE20A



SEL20 STEREO HEADPHONES Among the lightest, most compact headphones ever made, this set has a brilliant wide sound dispersion. Constructed on a unique open-back design. Features ultra-thin high-polymer film diaphragm for soft response.

Matching Impedance	: 4-16 ohms
Maximum Input Power	: 0.5V
Frequency Range	: 20-20000Hz
Weight	: 7.2oz (without connecting cable)
Connecting Cable	: 8.2 feet

SEL20 Headphones

\$23.15 (P&P \$1.00)

SE50 2-WAY STEREO HEADPHONES Pioneer's finest set of stereo headphones features a 3-inch cone-type element for rich dynamic bass and a horn-type element for clean, rich highs. Volume controls on each earpiece are provided to allow free control of reproduced sounds and for perfect balance of right and left channels. A level control attenuator is provided for the horn-type element. Easy and comfortable to wear, the SE-50 is cushioned for long-wearing without fatigue.

Matching Impedance	: 4-16 ohms
Maximum Input Power	: 2V (each channel)
Frequency Range	: 20-20000Hz
Weight	: 1 lb 6 oz (without connecting cable)
Connecting Cable	: 16 feet

SE50 Headphones

\$46.00 (P&P \$1.00)

CARTRIDGES

PC30 Induced magnet cartridge offers improved trackability, reduced moving mass with a very wide frequency response 10-23000Hz Output 4mV into 50000ohm. Stylus 0.5mil diamond. Stylus pressure 2.5gm

\$29.00

PC50 Is a professional quality induced magnet cartridge offering reduced intermodulation distortion and increased output. High signal/noise ratio and wide frequency response 10-25000Hz. Output 3mV into 50000ohm. Stylus 0.5 mil diamond. Stylus pressure 1.5-2gm

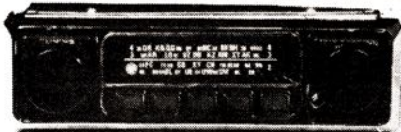
\$44.00

CAR RADIOS, AERIALS & ACCESSORIES

CAR RADIOS

We have chosen the two most popular models from the AWA range for our catalogue. Mail order customers can be assured that both units offer excellent long range performance anywhere in Australia with good tonal quality. They have also been chosen for easy installation in any negative earth 12V vehicle.

MODEL RU121B/11 SOLID STATE 9 Features a separate rf stage and SEEP,OTL Audio output system for maximum sensitivity. Seven transistors and two diodes, separate controls for tone, tuning, volume. Five push buttons give easy tuning and on-off. Radio can be manually tuned or the push buttons re-set to suit your preferences. Perhaps its greatest feature is a depth of only 3.2". This allows installation in dash boards where only a minimum amount of space is available.



Features: Sensitivity better than 24 db (for 0.5W) - Highly sensitive AGC system - removable face plate simplifies installation.

Specification	
Tuning range	:530 - 1605kHz
Sensitivity	:Less than 30db (at 20db S/N)
Speaker impedance	:4.8 ohm speaker required
Output power	:Over 3.5 Watt
Power supply	:12 - 14V negative earth
Dimensions	:6.3" W x 2" H x 3.2" D

Model RU121B/11 radio only \$58.00 (P&P \$1.00)
7" x 5" speaker to suit \$ 6.25



MODEL PL1 11 TRANSISTOR PRESSMATIC DELUXE is engineered for Australian conditions with dependable solid state circuitry - no wonder it's our best seller. We have many reports of good reception over distances in excess of 400 miles in daylight and reception of New Zealand programmes in Sydney after dark! Ask interstate truck drivers about it, they know a good radio.



Features: Separate rf stage - 2 stage if amplifier for added sensitivity.

Specification	
Tuning range	:530 - 1605kHz
Sensitivity	:30db (for 0.5W)
Loudspeaker impedance	:4 - ohm speaker required
Power supply	:12 - 14V negative or positive earth
Dimensions	:6.4" W x 2" H x 4.5" D

Model PL1 radio only \$89.00 (P&P \$1.00)
7" x 5" speaker to suit \$ 6.25

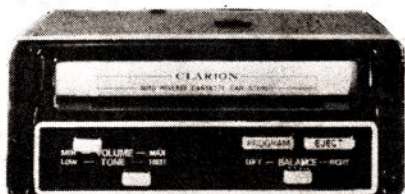
NOTE Both the above radios can be supplied with full installation kits for virtually any make or model of vehicle. Please write giving year and model of your vehicle for further details.

AWA CLARION CAR STEREO'S & ACCESSORIES

CASSETTE MODELS

MODEL PE809A STEREO PLAYER WITH AUTO-REVERSE Superbly engineered for convenience and quality, this unit features dual capstans which allow auto-reverse without removing the cassette. Normally the cassette has to be removed, turned over and re-inserted to play the other programme. The PE809A does it automatically at the end of play without the cassette having to be removed - a great aid to safe driving! The unit can be switched to the other programme at any time simply by touching the programme button.

The audio stage uses ICs for maximum reliability and the Belgian STAAR system in the tape transport mechanism gives stable playing on rough roads.



The small, compact size of the unit makes it suitable for vehicles where space is at a premium and its aesthetic appeal is enhanced by the use of modern slider controls.

Specifications	
Reproduction system	: 4-track, 2 channel, 2 programme stereo cassette tape player
Tape speed	: 1 7/8 ips
Wow & Flutter	: Less than 0.4%
S/N ratio	: Better than 40db
Frequency response	: 50 - 10000Hz
Power output	: More than 4W per channel (8W total)
Speaker impedance	: 2 x 4ohmspeakers required
Power supply	: 14V DC (10.8 - 15.6V) Negative ground
Semiconductors	: 4 ICs, 4 transistors and 2 diodes
Weight	: 3.74 lb
Dimensions	: 5.5" W x 2.16" H x 5.9" D

Unit only \$98.00 (P&P \$1.00)

MODEL PU607B CARTRIDGE STEREO AND RADIO COMBINATION A popular unit for easy in-dash installation in most vehicles. The radio tuner has a separate double-tuned RF stage and two tuned IF stages to ensure maximum sensitivity and range equal to any radio on the market. The unit has four integrated circuits containing the colossal total of 30 transistor elements all of which are silicon for reliability.

Special attention has been paid to the elimination of vibration effects in the stereo mechanism so that the unit can be used in the roughest conditions without distortion. (Most imported sets are just not up to some of our outback 'roads'). Output is a massive 8Watts



Specifications	
Radio tuning range	: 530kHz - 1605kHz
IF	: 452.5kHz
Tuning system	: manual permeability
Maximum sensitivity	: Better than 20db (0.5W)
Practical sensitivity	: Better than 30db (at 20db S/N)
Image ratio	: Better than 50db
AGC FOM	: More than 40db
Selectivity	: AMF-10kHz when detuned, more than 20db
Reproduction system	: 8-track, 4 programme, 2 channel stereo
Tape speed	: 3.75 ips
Wow and flutter	: Better than 0.3%
S/N ratio	: Better than 45db
Crosstalk	: Better than 30db adjacent channel
	: Better than 40db adjacent track
Frequency response	: 50 - 10000Hz
Maximum output	: 4W per channel (8W total)
Speaker impedance	: 2 x 4ohmspeakers required
Power supply	: 14V DC (10.8 - 15.6V) negative earth
Weight	: 4.4 lb
Dimensions	: 7.1" W x 1.95" H x 7.3" D

PU607B Unit only \$139.00 (P&P \$2.00)
Trimplate/Mountplates to suit \$ 4.95 each (P&P 50c)

76100 HQ Holden 76101 VH Valiant 76104 XA Falcon/ZF Fairlane (Please specify)

MODEL PE651A AUTO-REVERSE, STEREO AND RADIO COMBINATION This unit is by far the largest seller in Australia. It is so popular because it incorporates an extremely good quality radio plus the auto-reverse system described above and it can be installed in the dash of most vehicles thanks to an ingenious box-type escutcheon and panel overlay. This not only discourages stealing, but leaves more room under the dash for other essentials (like air conditioners, and her knees!)

Audio quality is high and there's power in reserve. The full 8W is plenty to drive up to 6 loudspeakers. The radio section has an rf stage and two if's to give it maximum sensitivity. Thoroughly recommended.



Specifications	
Reproduction system	: 4-track, 2 channel, 2 programme stereo cassette tape player (also plays mono tapes)
Tape speed	: 1 7/8ips
Wow and Flutter	: Better than 0.44%
S/N ratio	: Better than 40db
Cross talk	: Better than 30db adjacent channel
	: Better than 40db adjacent track
Frequency response	: 50 - 10000Hz
Autochange time	: Less than 8sec.
Radio Tuning range	: 530 - 1605kHz
IF	: 452.5kHz
Power supply	: 14V DC (10.8 - 15.6V) negative earth
Power output	: More than 4W per channel (8W total)
Speaker impedance	: 2 x 4ohmspeakers required
Semiconductors	: 4 ICs, 8 transistors and 6 diodes
Weight	: 4.6 lb
Dimensions	: 7.09" W x 2.17" H x 6.02" D

PE651A Unit only \$139.00 (P&P \$2.00)
Trimplate/mountplates to suit \$ 4.95 each (P&P 50c)

76180 HQ Holden 76182 XF Falcon/ZF Fairlane (state which required)

CARTRIDGE MODELS (8 track continuous play)

MODEL PE420A MINI TYPE IC CAR STEREO This Mini car stereo is very compact and light weight. Although normally mounted under the dash, a plate is supplied for in-dash mounting. The unit features a massive 12Watt audio output. Modern slider controls adjust tone, balance, volume and the changeover mechanism is either fully automatic or manual. The pre-amp uses ICs for reliability. An illuminated track change indicator tells which channel is being played.

Specifications	
Reproduction system	: 8-track, 4 program, 2 channel stereo
Tape speed	: 3.75 ips
Wow and flutter	: Better than 0.3%
Maximum output	: 6W per channel (12W total)
S/N ratio	: Better than 45db
Cross talk	: Better than 30db adjacent channel Better than 40db adjacent track
Frequency response	: 50 - 10000Hz
Speaker impedance	: 2 x 4ohm speakers required
Power supply	: 14V DC (10.8 - 15.6V) Negative earth
Semiconductors	: 2 ICs, 8 transistors, 1 diode, 4 thermistors
Weight	: 3.5 lb
Dimensions	: 5.5" W x 2.17" H x 7.1" D

PE420A Unit only \$69.00 (P&P \$2.00)



HE206, 2PIECE 8-TRACK HOME STEREO SYSTEM (ideal for background music) This versatile unit allows you to enjoy 8-track cartridges in the home. Built in solid state audio amplifiers gives excellent output and tonal quality. Attractively designed to suit bookshelf installations. As the programme plays continuously, it is ideal for parties and background music systems, at home, in the office or workshop. Separate balance, tone and volume controls and a jack for private listening on headphones.

Specifications	
Reproduction system	: 8-track, 4 programme, 2-channel stereo
Tape speed	: 3.75 ips
Wow and Flutter	: Better than 0.3%
Crosstalk	: Better than 30db adjacent channel Better than 40db adjacent track
Signal/Noise ratio	: Better than 40db
Frequency response	: 50 - 10000Hz
Maximum output	: 4W per channel (8W total)
Speaker impedance	: Built-in 4ohm speakers
Dimensions	: 5.9" W x 11.2" H x 8.4" D
Weight	: 7.7 lb

HE206 Unit Plus matching extension speaker (not shown) \$119.00 (P&P \$2.00)



AWA CAR STEREO SPEAKERS These speakers produce magnificent Hi Fi sound in the car. They feature large heavy duty magnets and moisture resistant cones. All will handle over 5Watts of power. We supply each pair of speakers with a mounting kit and wire of the correct size. The impedance of all the speakers is 4 ohms.

SKA046 This is the ideal speaker where only a shallow space is available, e.g. in doors, kick panels etc. The mounting space required behind the panel is only 2 1/4". Finished in deep chrome these speakers are also popular for ceiling or wall mounting in the home. Nominal size 6", sensitivity 96db/W, frequency response 130Hz - 9kHz, handling capacity 5W



\$16.00 per pair (P&P \$1.00)



SKA048 Features the very latest safety-soft grill, but this speaker is strong enough to resist the occasional knock. Finished in beautiful black matt, its dimensions are similar to the SKA046 above, however the frequency response is extended from 110Hz - 10kHz with a huge 6Watt power handling capacity. Ideal for flush mounting in doors, parcel shelves etc where an unobtrusive installation is sought.

\$18.00 per pair (P&P \$1.00)

SKA045 is a box type speaker designed for rear shelf, kick panel, under seat or wherever-you-like installation. Looks just right with any interior since it has a black finish with chrome edge trim. No, it won't deteriorate in the sun like cheap speakers do. Mounts in minutes using the kit supplied without drilling enormous holes or sawing. In fact quite a few people glue them in because it's easier. A great feature is the removable outer casing which you can discard later if you want to flush mount the speakers. Speaker size 5", Sensitivity 96db/W, Response 140Hz - 10kHz, power handling 5Watts, Size 171x178x110mm



\$18.00 per pair (P&P \$1.00)

AWA DASH FITTINGS Give your car radio installation the same finish as the professionals and take half the time over it!



Type	Vehicle	Price
73999/105	XA Falcon/ZF Fairlane	\$3.25
74821/002	Falcon XT	\$3.25
74823/005	Holden HT/HK/HG Black	\$1.25
74823/006	Holden HK Premier Teak	\$1.25
74823/008	Holden HG Premier Burrwalnut	\$1.25
74934/101	Valiant VE/VF/VG/VIP	\$2.50
75973/101	Valiant VH Regal (use with existing trim plate)	\$2.50
75991/105	Holden HQ Black	\$3.25
75992/102	Torana LJ	\$1.95

MODEL PE424A QUADRASONIC 4 CHANNEL IC CAR AND HOME STEREO PLAYER We saved this one till last. 4-channel sound provides the ultimate listening experience and with this unit you can enjoy the 'Quad' sound in your car and home at an extremely reasonable price. The quality and power of this unit puts many Hi Fi's to shame. It plays the new discrete 4 channel, 8 track cartridges as well as the normal 2 channel tapes (which it gives the four channel treatment).

A vast array of features including - a lockable car cradle to allow easy removal but prevent stealing - an attractive cradle for domestic use with built in 240V power supply - shattering 24W of audio power - 8 ICs with a total of 48 separate transistor elements - automatic switching from 2 to 4 channel - 4 separate power amplifiers - slider controls for front and rear volume and tone plus separate balance control - automatic or manual changeover of program material with continuous repeat option. Yes this unit gives you the real on-stage, surrounded-by-sound feeling!

Specifications	
Reproduction system	: 8 track 4 or 2 channel stereo
Tape speed	: 3.75 ips
Selection	: Automatic, manual, repeat
Wow and flutter	: Better than 0.3%
Frequency response	: 50 - 10000Hz
Signal to Noise ratio	: 45db
Power output	: 6W per channel (24W total)
Speaker impedance	: 4 x 4ohm speakers required
Power supply	: 14V DC (10.8 - 15.6V) Negative earth
Weight	: 4.4 lb
Dimensions	: 7.87" W x 2.16" H x 7.09" D



PE424A Unit complete with car cradle and lock \$121.80 inc P&P

EA023A Home AC powered cradle \$55.00 inc P&P

AWA Home speakers to suit (or use any good 4-8ohm) \$72.00 set of four inc P&P



CAR RADIO AERIALS AND ACCESSORIES

AR300 UNIVERSAL TOP COWL Can be mounted virtually anywhere on level or sloping surfaces simply by drilling a 1" hole. Has 3 sections in high quality rustproof finish. Extends to approx 45" from 16". Supplied complete with 4' of heavy duty shielded, low-loss coaxial cable and plug

1 - 9	10 up
\$2.75	\$2.50

DS8 SUPER-RANGE TOP COWL This is Australia's best known long-range aerial. Made in Canada it is very popular with interstate truckies because of its ruggedness and long range performance. Maximum extended length is a whopping great 60". A heavy duty tempered steel spring at the base allows the aerial to bend when hit by low flying aircraft etc. Do not confuse with the cheap imitations which bend and then break! Supplied with lead and plug

\$8.95 (P&P 70c)

NR206 ROOF AERIAL Used to be popular only with Rolls Royce and Jag owners but snob owners of Minis are buying them as status symbols now. This is a quality deep chromed aerial with a neat spring base section to prevent breaking when driving under large semitrailers. Supplied with extra long lead and plug

\$6.50 (P&P 50c)

NA510B ELECTRIC AERIAL Up and down she goes at the flick of a switch. Built in slipping clutch Mast raises to 43" and retracts completely. Really sexy, impresses everyone whether you can afford the radio to go with it or not. Operates on 12V supply of either polarity. Twin installations are even greater eyeturners! Requires a 1" hole and underhangs 12"



\$21.00 (P&P \$1.00)

NR411 HIGH QUALITY LOCK DOWN AERIAL Very popular because it is vandal proof. Heavy duty chrome plated finish. Mounts in a 1" diameter hole with only 13" underhang. Extends to 42" to give optimum performance. A great feature is the fact that it can be mounted completely from outside - in some of today's cars you just can't get at the inside to do up nuts etc!

1 - 9	10 up
\$3.75	\$3.50

LV324 VW LOCK-DOWN AERIAL This is a special high slope aerial for VWs from 1967 onwards and other 'difficult' cars. On VW fits directly into hole provided.

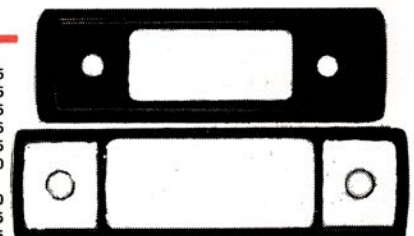
1 - 9	10 up
\$4.75	\$4.25

CAR RADIO NOISE SUPPRESSORS

C1 Capacitor for mounting on the coil, generator, alternator or any part generating noise 0.5uF 100V .50c

R1 Resistor Screw-in type for inserting in HT leads between the coil and distributor to help reduce impulse noise 10kohm .50c

RS1 Spark Plug Suppressor resistor mounts directly on the plug 10kohm .50c



AWA TV & RADIOS

P1 The very popular 11" lightweight, self-contained portable TV. Use it in the house, on holidays, at the weekend, in the shack when atmospherics are bad ... a go-anywhere portable with big performance. Twin telescopic aerials with highly sensitive tuner ensure excellent fringe area reception. Private ear-piece for personal listening. Robust white cabinet. AC operated. Measures 24"W x 10"D x 10 1/2"H.

\$165.00 (P&P free)



0840 TRI FI STEREO RECORD PLAYER Features a 2-speed 8" turntable, sapphire stylus, separate bass and treble controls and stereo headphone socket. Finished in black and chrome, supplied complete with speakers. Operates from 240V supply.

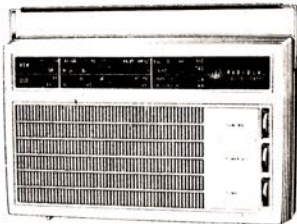
\$60.00 (P&P \$2.00)

888 PORTABLE RADIO Has 8 transistors and 3 diodes. Ideal long range set for country use since it has an RF stage 6" oval speaker and new non-metallic chassis. Twin 'All States' dial scale, tone control and robust carrying handle. Finished in summer white, a great portable to take anywhere.

\$59.00 (P&P free)

Optional 240V AC power supply A & R type PS164

\$12.00



867 Top-selling - and performing - transistor. Has 'handspan' tuning with all Australian call signs on the dial. Earpiece, and comes in attractive carrying case, finished in beautiful black with attractive trim. Includes battery.

\$29.50



CR23 8 - transistor, 2 band set with side controls and built-in telescope aerial for short wave reception. Covers broadcast band and shortwaves 3.2 - 12MHz. Supplied in handsome carrying case with shoulder strap.

\$39.00 (P&P free)



ER308 SOLID STATE MEGAPHONE Ideal for large yacht owners, sports enthusiasts and people who get sore throats shouting. Completely howl-free amplifier with unique differential microphone. Solid state amplifier has 16Watt output, giving a range of about 1km. Volume control and press-to-talk switch. Rugged weatherproof and operates from 'C' cells. Every 5 acre block owner with children needs one.

\$52.00 (P&P \$1.00)



AWA ...leaders in audio

TURNTABLES

GOLDRING

CARTRIDGES & STYLUS

We have added to our range of automatic and manual stereo changers — the famous BSR brand is now available.

G11 201 Deluxe unit for the discriminating. Aluminium turntable rings. Features include 4 speeds, cast (not pressed) turntable, 4 pole motor, low mass aluminium counter balanced arm, cue control, automatic lock, bias compensator, stylus pressure adjuster, calibrated stylus pressure control, muting switch, switch "pop" filter etc.

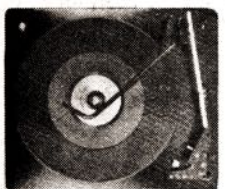
Ceramic Stereo Cartridge (Sapphire stylus) \$64.00

P&P approx. \$2.00



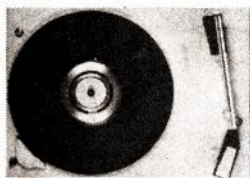
G11 205 — A fully automatic changer (4 speeds) BSR simplicity in styling results in a thoroughly dependable, very inexpensive record changer that would add distinction to any radiogram or stereo unit. Finished in black with a combination of black and silver on pick-up arm and control panel.

Complete with Ceramic Stereo Cartridge (Sapphire stylus) \$34.00
P&P approx \$2.00



G11 208 Robust inexpensive 4 speed turntable, 240 volt operation, pearl grey turntable and pick up arm, slate grey unit plate.

Complete with Ceramic Stereo Cartridge and Sapphire stylus \$22.00
P&P approx \$1.50



GOLDRING STYLUS
THE WORLD'S BEST REPLACEMENT STYLUS

The following is our present range of famous Goldring replacement units — all fitted with sapphire stylus. Illustrated below.

No.	Equivalent	Type	Price
GCS3	C.I. BSR	Ceramic Stereo	\$6.90
GCS4	SC5M BSR	Ceramic Stereo	7.90
GCS16	3509 Sonotone	Ceramic Stereo	5.70
GCS19	GJ46 Japanese	Ceramic Stereo	5.00
GCM7	GJ23 Japanese	Ceramic Mono	5.00
GXM1	TC8M BSR	Crystal Mono	3.10
GXM2	X5M BSR	Crystal Mono	4.80
GXM9	DC400 Ronette	Crystal Mono	4.40
GXS14	SX5M BSR	Crystal Stereo	6.20
GXS17	9TA Sonotone	Crystal Stereo	4.80
GXS18	TC8S BSR	Crystal Stereo	5.00
GXS19	105 Ronette	Crystal Stereo	7.25

GOLDRING STYLUS

Our range of sapphire and diamond stylus is extremely varied and therefore too complex to show in this catalogue. For customers who require replacement stylus we suggest that they post the old stylus (or details of stylus or cartridge no.) to us with the approximate amount as shown in the scale below. We will post correct replacement and issue credit or refund as necessary.

Sapphire stylus range from \$0.60 to \$1.20 — remit \$1.50
Diamond stylus range from \$2.70 to \$3.80 — remit \$4.00

MAGNETIC CARTRIDGE

— an inexpensive high quality magnetic cartridge with a diamond stylus.

Frequency response: 15Hz - 25,000 Hz
Output: 5mV
Compliance: 10 x 10⁶ cm/dyne
Tracking WT: 1 - 2.5 Grams
Stylus: Conical diamond
Channel Separation: 20 dB



\$8.00 (P&P 50c)

GCS3

GCS4

GCS16

GCS19

GCM7

GXM1

GXM2

GXM9

GXS14

GXS17

GXS18

GXS19



RECORDING TAPE & ACCESSORIES

Goldring 1/2 Mil Polyester Tape, individually boxed — the best of the inexpensive tapes.

3" x 300 ft.	95¢	P&P 30¢
5" x 1200 ft.	2.50	30¢
7" x 2400 ft.	4.60	30¢
Spare Tape Spools		
3"	25¢	
5"	50¢	
7"	65¢	

B.A.S.F. "LH" CASSETTES — The Professional's Choice.

	1-9	10 up
C60 LH	\$1.80	\$1.60
C90 LH	2.55	2.30
C120 LH	3.50	3.10
C60 Chromium Dioxide	\$2.95	
C90	\$3.60	

P&P 30¢ per order.

CONCORDE BRAND Australian Distributor: Vic Furnari Pty. Ltd.

CONCORDE CASSETTES Top quality polyester, American Tape cheap but very reliable. Screwed case.

	1-9	10 up
C30	\$1.00	\$.93c
C60	1.15	1.06
C90	1.70	1.57
C120	2.20	2.04
Head cleaner	1.20	1.11

MORTONE BT CARTRIDGES A professional quality low noise tape from top American maker

	1-9	10 up
64 min	\$2.95	\$2.65
80 min	3.30	3.00
Head cleaner	2.70	2.50

CARRYING CASE Made from attractive, heavy-duty vinyl and ideal for vehicle or home storage. Protect tapes from dust and heat so they last longer. Choice of colours - black, red, tan.

	1-9	10 up
CC1S holds 12 cassettes	\$2.00	\$1.90
CC1D double deck, holds 20 cassettes	3.00	2.85
CC2 holds 10 cartridges	2.85	2.60

TDK CASSETTE AND REEL TO REEL



CASSETTE

DE-LUXE LOW NOISE Is a general purpose tape made to the highest standards with improved noise characteristics

	1-9	10 up
C60	\$1.85	\$1.58
C90	2.70	2.28
C120	4.10	3.50

SUPER DYNAMIC Incorporates the TDK developed Gamma Ferric Oxide which because of its small particle size (0.4u v. 0.8u) and a much higher coercivity (350 Oe v. 280 Oe) gives an extended frequency response from 30 - 20000Hz with much lower high frequency drop off. SD is flat with normal bias to 10000Hz v. 5000Hz with conventional tapes. The improved mechanics of this tape binders, surface etc make it vastly superior.

	1-9	10 up
C60 SD	\$3.60	\$3.10
C90 SD	4.50	3.80
C120 SD	6.30	5.35

EXTRA DYNAMIC Has been developed to meet the need for a tape that suits every machine with out having to adjust the bias. Superior performance is assured on any machine. TDK have carried out further development to achieve a stabilised Magnetite material suitable for tape use. The result is an undreamed-of linearity. No longer is it necessary to correct excessive h.f. response with your CrO switch. Bias setting is normal and the sound fantastic! Response from 20 - 23000Hz, now you can only blame your recorder.

	1-9	10 up
C40ED	\$3.60	\$3.05
C60ED	4.50	3.80
C90ED	6.30	5.35

REEL TO REEL

DE-LUXE LOW NOISE

Reel size x length	1-9	10 up
DL150H-7-1200'	5.85	4.95
DL150-7-1800'	7.50	6.40

SUPER DYNAMIC (as used by many recording studios)

	1-9	10 up
SD150H-7-1200'	\$ 8.50	\$7.25
SD150-7-1800'	10.50	9.00

BASF REEL TO REEL TAPE (High quality 'L.H.' tape)

7" x 2400 "L.H." \$8.90 (P&P 75c) P&P on Reel to Reel Tape is 50c per order.



Record Brush Tone Arm Lift (RA50) — clips on any arm — clears away dust and helps accurate band selection.

Record Anti-Static Cleaning Kit (RA53) — fluid, needle brush and cleaning puff to keep records clean and static free.

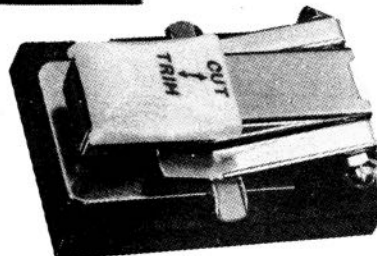


Tape Recorder Head Cleaner (TA10) and Tape Head Cleaner and Lub Kit (TA11) — perfect for cleaning tape heads, removing dust, oxide and dirt particles.

GOLDRING



Stylus Pressure Gauge (RA51) — adjustable for measurement of needle and tone arm weight. Easily calibrated.

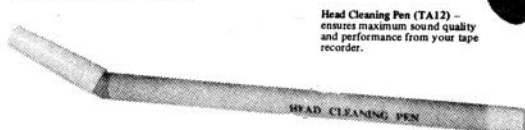


Splicers (Recording Tape TA15 — Cassette Tape TA16) — professional type, ideal for all home recorders.

Record needles Cleaning Kit — (RA52) — cleaning fluid and brush successfully removes dirt and foreign matter from stylus point to restore 100% effectiveness.

Cassette Tension Winder (TA17) — winds tape for easy editing and repairs.

RA50 \$0.75 c, RA51 \$1.20, RA52 \$1.20, RA53 \$1.40,
TA10 \$0.85c, TA11 \$1.40, TA12 \$0.75c, TA15 \$2.75,
TA16 \$2.75, TA17 \$0.85c



Head Cleaning Pen (TA12) — ensures maximum sound quality and performance from your tape recorder.

BELT DRIVE TURNTABLE

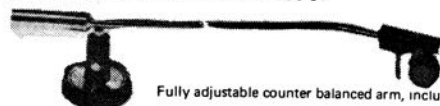
APAN HI-FI TURNTABLE — The Professional Model.

12" cast turntable plate (weighs 4 lbs.) hydraulic cueing device, 2 speeds, fully adjustable tracking weight with counter balanced arm, 4 pole induction motor, auto stop, magnetic cartridge with diamond stylus, completely wired.



BMU 121 Manual	\$75.00	P&P \$3.00
BRU 121 Semi automatic	\$89.00	\$3.00
BFU 121 Fully automatic	\$105.00	\$3.00
Base and lid to suit APAN or B.S.R. (Teak)	\$22.00	\$1.00

RECORD CLEANER



Fully adjustable counter balanced arm, including 2 spare anti static rollers \$3.90 P&P 50¢

EARPIECES

Miniature earpieces for many purposes — transistor radios, xtal sets etc. Convenient and lightweight to wear. Complete with miniature connecting lead and plug.

EP2 Magnetic 8 ohm
EC2 Crystal high impedance



1-9	10 up
65¢	55¢
85¢	.75¢



SPEAKERS



Model	Size	Impedance ohms	Power Cap W	Standard Resonance Hz	Frequency Range Hz	Flux Density Gauss	Baffle Opening	Application	Price	P&P
3TC	3 1/2"	8,15	15RMS	—	5000-18000	7300	3.1/8	High frequency tweeter	\$ 3.75	\$.25c
4T	4"	8						General Purpose	4.20	.50c
6J	6"	8	7RMS	85	80-7000	9350	5.5/8	Inexpensive Hi Fi and replacement use	6.75	.50c
6WR	6"	8	12RMS	45	30-16000	12300	5.5/8	Wide range twin cone	10.50	.75c
8-30	8"	8,15	30RMS	45	30-8000	11000	7.1/8	Top quality woofer for Hi Fi systems	17.00	1.00
8WR	8"	8	16RMS	45	30-16000	12300	7.1/8	Wide range twin cone	11.50	.75c
10WR	10"	8	16RMS	45	30-16000	12300	8.7/8	Wide range twin cone	12.50	.75c
12WR	12"	8,15	16RMS	45	30-16000	12300	11"	Wide range twin cone	13.50	.75c

THE MAGNAVOX 8-30 HIGH FIDELITY LOUDSPEAKER 'Better than any speaker we have tested costing twice as much and comparable to all imported units costing three times the price' So said Electronics Today in their review. We can only endorse their comments.

The Magnavox 8-30 is an entirely new 8" diameter loudspeaker primarily intended as a bass driver in small to medium sized vented enclosures and capable of handling amplifiers up to 30W rms. The drive system consists of a 3.25lb barium ferrite magnet driving a 1.5" diameter voice coil wound on a high tensile aluminium former. The curvilinear cone is rigidly constructed to nullify cone break-up and the suspension allows excursions upto 0.7" with no loss of linearity. Mid range distortion caused by standing waves on the cone is eliminated by the viscous damping treatment at the cone edge which also helps to strengthen the cone suspension.

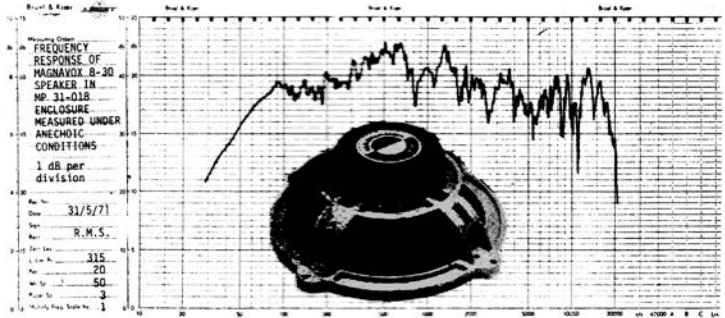
The speaker is assembled in a rigid diecast aluminium housing suitable for front or back mounting. It is finished in an attractive gloss grey with contrasting bright red magnet assembly.

The enclosure designed by Magnavox and extensively tested by them is free-standing with a volume of 1.6cu ft. It uses two 3TC tweeters with the 8-30 with a simple capacitor crossover at 5kHz. The enclosure is vented and completely lined with Innerbond to eliminate standing waves, and provide a lower 'fundamental' resonance. The overall response is from 35 kHz to 18kHz.

MAGNAVOX 8-30 SPEAKER SYSTEMS

DSE 8-30A speaker kit consists of 8 or 15ohm (specify) Magnavox 8-30. Two 3TC Tweeters and a crossover capacitor \$ 25.50 (P&P \$2.00)

DSE 8-30B speaker kit consists of 8 or 15ohm (specify) Magnavox 8-30 speaker with Philips or Plessey Dome tweeter and crossover capacitor \$ 26.00 (P&P \$2.00)



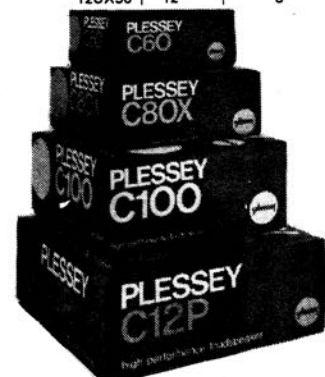
ELECTRONICS TODAY — AUGUST 1971

MAGNAVOX 8-30 CABINET KIT (1.6cu ft) Manufactured specially for us exactly to Magnavox specification. This kit comes complete with port, innerbond, attractive speaker cloth etc. We have been able to get the outer panels pre-mitred, assembled and glued in the factory to give a hidden joint which the amateur could never achieve. The finish is expensive looking Teak. Baffle is pre-cut to take either the 3TC or dome tweeter. \$ 24.50 (P&P Road freight approx \$4.00)

See page 40 for details on Magnavox 8-30 Cabinet Kit.

PLESSEY

Model	Size	Impedance ohms	Power Cap W	Fundamental Resonance	Frequency Range	Flux Density Tesla	Baffle Opening	Application	Price	P&P
X30	1"	8	20RMS	—	3KHZ-30KHZ	1.38	3.5/16	High Frequency, high power tweeter	\$ 8.90	\$.50c
C64G	6x4	3.5,15	3.5RMS	125HZ	120HZ-6KHZ	.9	5.7/8x3.7/8	Oval car radio & replacement use	5.20	.50c
C75L36	7x5	3.5,15	7RMS	115HZ	110HZ-7KHZ	.96	6.7/8x4.5/8	Oval car radio & replacement use	6.25	.50c
C96L36	9x6	3.5,15	7RMS	90HZ	85HZ-6KHZ	.96	8.3/4x5.7/8	Oval car radio & replacement use	6.90	.50c
Deluxe										
C8MX	8"	8,15	7RMS	35HZ	35HZ-20KHZ	.91	7"	Wide range twin cone for Hi Fi systems	9.50	.50c
C80	8"	8	20RMS	45HZ	35HZ-8KHZ	1.15	7"	Low frequency woofer	14.10	1.00
C100	10"	8	20RMS	45HZ	40HZ-11KHZ	1.15	8.5/8	Woofer with curvilinear cone, extra high quality	14.00	1.00
C160X	10"	8	20RMS	45HZ	40HZ-20KHZ	1.15	8.5/8	Superb Wide Range twin cons, top quality speaker	15.50	1.00
C12PX	12"	8,15	30RMS	40HZ	35HZ-13KHZ	1.3	11"	Wide range twin cone, high power	21.00	1.00
12U50	12"	8	50RMS	65HZ	40HZ-11KHZ	1.33	11"	Super power, low frequency woofer for guitar and PA use	36.00	1.00
12UX50	12"	8	50RMS	65HZ	40HZ-13.5KHZ	1.33	11"	Twin cone super power wide range for guitar and PA use	39.00	1.00



THE CFL TECHNOLOGY

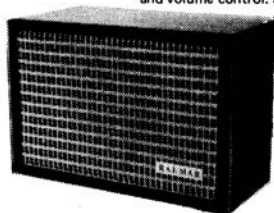
CFL — "Controlled Fibre Length" — is a new advanced technique developed by Plessey for manufacturing speaker cones. The length of the fibre used in the cones is a critical factor in the final performance of the speaker. Both frequency response and speaker efficiency can be changed considerably by varying fibre lengths. With CFL, Plessey can now assert rigid control over the basic paper pulp used to felt the cones. Fibre lengths and pulp densities can be varied to meet specific requirements, resulting in cones with optimum resonance/efficiency combinations.

Plessey CFL cones provide better transient response, minimum distortion, smoother, richer bass, brighter top frequency performance and improved overall efficiency.

PLESSEY
Rola

EXTENSION SPEAKERS

Model SP1 - An extremely handy and attractive extension speaker complete with volume control - ideal for background music, paging, extra speaker in spare room, ham shack, etc. The unit consists of a 4" x 6" 4 watt speaker mounted in a walnut timber cabinet with rear wall mount bracket, cloth grill and volume control. Size 8" L x 5 1/2" H x 3 1/2" D.



1-5
\$8.75 - 5 up
\$8.00

SP3 - Slightly larger, 5" speaker otherwise as above.

\$10.50 \$10.00

P&P 75c

MINIATURE TRANSISTOR RADIO REPLACEMENT SPEAKERS - ALL 8 OHMS



Diameter

2 1/2"
2 1/2"
2 3/4"
3"

1-4
\$2.25 \$1.95
2.35 2.00
2.50 2.15
2.90 2.45

GRILL CLOTH

High quality "Colan" speaker cloth. Allows even transfer of all frequencies. Available 28" x 28" in attractive black.

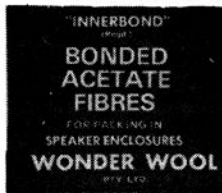
Price \$4.50 P&P 50c

FIBREGLASS INSULATION

1" thick "Innerbond" sound absorbing material, excellent for speaker enclosures and any situation where sound absorption is required.

36" wide, per yard \$1.80

P&P 50c per yard.



A new resilient bonded material made from ultra fine Composites Acetate Fibres that gives high efficiency of sound absorption. "INNERBOND" is light, clean, dust-free and easy to handle. Because all the fibres are bonded "INNERBOND" will hang as a "curtain" and will not fracture or break down due to vibration. It is unaffected by moisture and is vermin resistant. "INNERBOND" is 1" thick and has a normal thickness of 1" and at this density is recommended as a packing in speaker enclosures for sound absorption.



Bring in the whole wide world

REALISTICALLY

with the

REALISTIC DX150A Communications Receiver

REALISTIC DX150 COMMUNICATIONS RECEIVER Makes the average radio look like a crystal set. Tune in stations all over the world on SW/CW/SSB/AM/Broadcast bands 600kHz to 30MHz. Mains or battery operation or even 12V cigarette lighter in your car. Has over 30 semiconductors. Product detector for SSB/CW with fast or slow AGC. Variable pitch BFO, illuminated electrical bandspread, fully calibrated for the amateur bands. Cascade RF stage, ANL for RF and AF, Zener stabilised supply rail with OTL audio stage. Built in illuminated 'S' meter, monitor speaker plus phone/extension socket. Sensitivity is 2uV at 10db sig/noise. Measures 6 1/2" H x 14" W x 9" D and weighs 17lb. New stock has FET front end still at old price.

\$225.00 (P&P \$3.00)



Transistorised.
All solid
state

4 Bands
535 to 30 MHz
(includes Broadcast)

240V AC
or 12V DC
operation



WALKIE TALKIE UNITS

MIDLAND 1 WATT "SUPER POWER" 12 TRANSISTOR MODEL 13700S

the ultimate unit with all features including provision for 2 channels, tuned R.F. stage, 1 microvolt sensitivity, mute control, calling tone, heavy duty aerial, maximum power allowable, P.M.G. approved (licence necessary) supplied with one set of crystals. P&P 1.00

Specifications:-

Range: Up to 10 miles (depending on terrain etc.)
Up to 50 miles over water
Frequency: 27.240
Freq. Stability: $\pm .005\%$
Transmitter: Crystal controlled 1 watt
Receiver: Superhet crystal locked
Antenna: 13 Section telescopic
Power Source: 8 x UM3, 1.5V batteries
Size: 8 1/4" x 3 1/4" x 1 3/4"
Weight: 25 ozs. (metal case heavy duty)

1-9
\$39.95 5 up
\$37.95
\$12.50

12 Volt Re-chargeable Nickel-Cadmium Batteries

AC Chargers/AC Eliminator (240V AC)

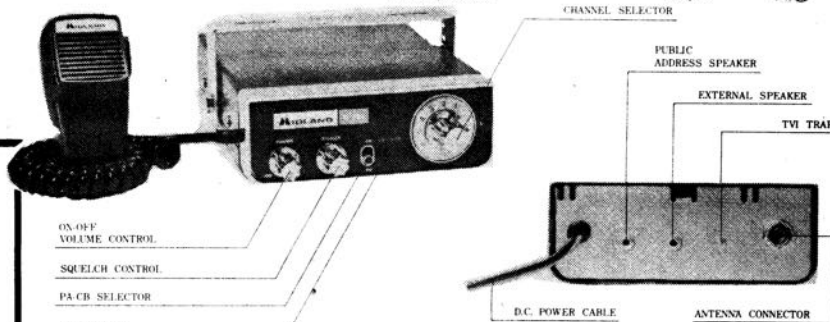
\$13.50

Accessories for Midland Units (1 watt and 5 watt).

P&P 50c

Crystals for 27.065, 27.085, 27.125, 27.24, 27.88, 28.1, 28.1, 28.3, MHz operation

Per pair \$4.50



MIDLAND 5 WATT MOBILE TRANSCIVER An extremely compact (5 1/2" W x 2" H x 7" deep) unit for mobile, ship or base operation, 16 transistors, 6 diodes, squelch, 6 channel switching, P.A. facility, mounting bracket, high quality microphone, one microvolt sensitivity, noise limiting, active A.G.C. circuit eliminates fading and overdriving. Supplied complete with one set of crystals (27.88) and 12 volt supply lead. Fully P.M.G. approved.

MIDLAND 13-856S (12volt) \$97.50 (P&P \$1.00)

240 v power supply to suit \$35.34 (P&P \$1.00)

27 mc whip aerial to suit \$15.53 (P&P 50c)

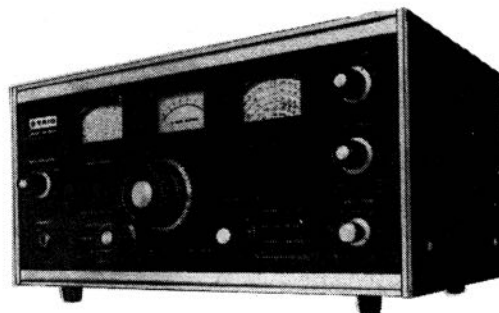
WARNING: BOTH THE ABOVE UNITS MUST BE FULLY LICENSED BY THE P.M.G. RADIO BRANCH BEFORE OPERATION CAN COMMENCE.

TRIO 9R-59DS COMMUNICATIONS RECEIVER Ideal for amateurs and shortwave listeners alike. Cheaper because it uses valves but don't dismiss it for that. Covers 550kHz to 30MHz. Separate dials for tuning and bandspread with anti-backlash mechanism for accurate calibration. Superb selectivity thanks to mechanical filter and unusual stability. Product detector for SSB and large easy to read 'S' meter. Automatic Noise Limiter. RF and AF gain controls and antenna trimmer to peak up signals. Built-in speaker and 1.5W output. Measures 7" H x 15" W x 10" D and weighs 19 lb.

\$180.00 (P&P \$3.00)

TRIO
9R-59DS COMMUNICATIONS
RECEIVER

- 4 BANDS COVERING 540 KHz TO 30 MHz
- TWO MECHANICAL FILTERS ENSURE EXCELLENT SELECTIVITY
- PRODUCT DETECTOR FOR S.S.B. RECEPTION
- AUTOMATIC NOISE LIMITER
- LARGE TUNING AND BANDSPREAD DIALS FOR ACCURATE TUNING
- CALIBRATED ELECTRICAL BANDSPREAD
- "S" METER AND A.F. GAIN
- 1 MICROVOLT SENSITIVITY FOR 10 dB S/N RATIO



Western Electronics
EST. 1967
SPRING HILL, AUSTRALIA
(A unit of Jacoby Mitchell Holdings Ltd)

AUDIO ADAPTOR CABLES

These top quality cables are all fully shielded and pre-terminated.

Ref.No	72" Long Leads		
33	5 Pin din plug To 5 Pin din plug	\$2.25	
30	5 Pin din plug 4 x 3.5 mm plugs	2.80	
32	5 Pin din plug 4 x 6.5 mm plugs	3.25	
31	5 Pin din plug 4 x RCA plugs	2.80	
71	5 Pin din plug 2 x 3.5 mm plugs	2.00	
95	4 x RCA plugs 4 x RCA plugs	2.95	
21	RCA plug RCA plug	.80c	
22	RCA plug 3.5 mm plug	.80c	
24	3.5 mm plug 3.5 mm plug	.80c	
98	3.5 mm plug 3.5 mm line socket	1.00	
42	3.5 mm plug 2 Alligator clips	1.20	
25	3.5 mm plug 6.5 mm plug	1.10	
86	3.5 mm plug 2 x 3.5 mm plugs	1.50	
87	3.5 mm plug 2 x RCA plugs	1.50	
10	3.5 mm plug Stereo line socket	1.55	
15 Foot Long Coiled Leads - for Headphone Extension			
157	Stereo plug Stereo line socket	\$2.95	
Short 'Y' Adaptor			
96	Stereo plug(6.5mm) 2 x Stereo line socket (6.5mm)	\$2.50	

Vic Furnari

INTERCOMS

Model KE-117 A highly efficient solid state intercom at an amazingly low price - will work over any distance, up to 500' apart - can be wall mounted or conveniently placed on the desk. Master unit has volume control - complete with battery and 50' cord.

KE-117 Master and one slave \$9.75
KE-720 Master and three slaves \$22.00

P&P 50¢

INSULATION TAPE

Black P.V.C. insulation tape - a must.

20 yard roll \$0.35¢

POWER SUPPLIES

Famous A&R 240V AC to low voltage D.C. Power supply units are the most economical way to operate battery equipment from the mains - they will pay for themselves within months.

MODEL PS82

240V AC to 6 or 9 volts DC unregulated. Complete with power cord and three pin plug, 100 MA max. output, suit small transistor radios etc.

\$10.50 P&P 50¢



MODEL PS164

240V AC to 6 or 9 volts DC (switched) unregulated. Max. current 300MA, ideal for all small tape recorders, cassettes etc. Complete with power cord and plug.

\$13.60 P&P 50¢



MODEL PS203

Deluxe high current model which delivers up to 1/2 amp fully regulated suitable for all portable tape and cassette recorders variable voltage output. 6,7.5,9 and 12 volts, metal case, rugged construction.

\$23.50 P&P \$1.00

CONVERTER: CAR BATTERY TO TAPE RECORDER

12 to 9 or 6 Volt converter, plugs into cigarette lighter and allows lower voltage equipment (6, 7.5 or 9v) such as cassette tape units and portable radios to operate from the car battery - complete with lead and power plug. Negative earth 500 ma max.

\$5.00
P&P 30¢



T.V. AERIALS

Spiral type indoor aerial \$1.50 (P&P 50¢)

Top quality "antiference" aerials, non ferrous construction, corrosion resistant. All aerials cover channels 0 to 10 - easy to fit instructions are supplied.

Model 213 comprises of a folded dipole for the low band with a four element yagi array for the high band, providing very much higher gain and directional effect on these channels for elimination of ghosting and interference. Ideal general purpose.

\$8.75

MODEL 213

Model 215 is an extremely efficient eight element unit designed for weak and "problem" areas where very hi-gain and excellent directional characteristics are needed to minimise ghost reflections and interference. Operates as a three element unit on low band and as a six element, double driven yagi on high band.

\$11.50

Above aerials must be railed or go by road transport. Charges approx. \$2.00. T.V. ribbon for the above aerials - see section on Wires and Cables.

E-CRAFT AERIAL ACCESSORIES

Wire now for colour using noise free co-axial cable.

O.S.A.B. Waterproof Balun 300 ohm to 75 ohm

including mast, clamp and 18" feeder

\$3.10

4SB Balun in plastic case with 4' coax and

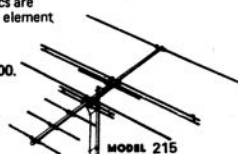
plug - for T.V. Set mounting

\$2.80

2.3.1.S 2 way 300ohm Splitter in case (for

operating 2 T.V.'s off one aerial)

\$2.40



WIRES & CABLES

MINIATURE SPEAKER LEAD

Multi purpose cable, 2 conductors, marked with trace for polarisation, extremely flexible, ideal for hi-fi speaker installations, intercom wiring etc.

	P&P
Per Yard	.09¢
100 yards	5.60 1.00

TWIN CORE MAINS FLEX

Rated at 240V AC continuous - white as used for extension lights, standard lamps etc., can also be used for speakers and intercoms if lower resistance is required.

	P&P
Per Yard	.10¢
100 yards	8.80 1.00

HOOKE UP WIRE

7/0076 or 10/010 plastic covered, fully tinned hook up wire available in white, yellow, blue, green, red, black and orange.

	P&P
Per Yard	.04¢
100 yards	2.80 1.00

Special heavy-duty hook-up and high current wire. Ideal for wiring high current circuits in vehicles, switchboards etc. Full 240V insulation available in Red or Black.

23/0076 per yard	\$.08c
100 yds	\$5.50 (P&P \$1.00)
40/0076 per yard	\$.12c
100 yds	\$8.50 (P&P \$1.00)

SHIELDED CABLE

Single conductor, rubber covered light duty, extremely flexible cable - ideal for patch cords, pick-up connections etc. Grey.

	P&P
Type SC1 Per Yard	16c
100 yards	\$12.50 1.00

As above - but double conductors (fig.8 type) with separate shields ideal for stereo connections. Grey.

	P&P
Type SC2 Per Yard	.28¢
100 yards	\$20.00 1.00

Type SC4

4 conductors with 4 shields. Ideal for stereo connections using D.I.N. plugs and sockets - grey PVC covered.

	P&P
Per Yard	.50¢
100 yards	\$40.00 \$2.00

SCM2 Extremely small diameter (1/16" dia), 2 core, shielded cable for use in pick-up arms etc

per yard	\$.30c
100 yds	\$26.00 (P&P \$1.00)

TINNED COPPER WIRE

1 pound Roll 16, 18 or 22 SWG \$1.80 \$0.50

POWER CABLE - 3 Core

Standard "Mini" grey plastic covered power cable - 3 core - used for 240V connections where earthing is required - rated at 5 amps 5/16" diam.

	P&P
Per Yard	23¢
100 yards	19.00 1.00

T.V. FEEDER RIBBON

300 ohm twin ribbon for connecting aerials to T.V. sets - maintains perfect balance -

	P&P
Per Yard	.07¢
100 yards	5.00 1.00

300ohm Open type, black, low-loss for outdoor use.

per yard	\$.10c
100 yds	\$8.00 (P&P \$1.00)

COAXIAL CABLE

RG5RU light duty 50 ohm coax for use up to 400 MC. Ideally suited for unbalanced T.V. feeder systems and transmitter use by amateurs, radio telephone technicians etc. 1/4" diam. Black.

	P&P
Per Yard	28¢
100 yards	25.00 1.00

UR67 heavy duty, 50 ohm coax cable for long run feeder systems and transmitters.

	P&P
Per yard	\$0.70c
100 yard Roll	\$64.00

DS75 Special low loss 75 ohm cable (5/16" dia) for TV aerial systems - ideal for colour if you're thinking ahead!

per yard	\$.20c
100 yds	\$17.00 (P&P \$1.00)

TELEPHONE CABLE

Type used by P.M.G. for internal telephone wiring - ideal for intercoms etc.

	P&P
4 conductor, per yard	.12¢
100 yards	\$8.27 75c
12 conductor, per yard	.25¢
100 yards	\$18.50 \$1.00

SPAGHETTI

P.V.C. available in red, black and green. 1.5 mm, 3 mm or 5 mm 5cents per yard.

HARDWARE NUTS & BOLTS

NYLON NUTS AND BOLTS Precision moulded from '66' white nylon. Fully insulated, will not shake loose, corrosion free, resist high temperatures. Light and tough we now stock the following hard-to-get hardware so essential for transistor and heat sink use.

	Each	200 Pack
1/4" x 4BA cheese head	3c	4.60
1" x 4BA " "	4c	5.40
4BA hex. nut	6c	10.40
4BA washer	3c	4.60
1/4" x 6BA cheese head	3c	4.40
1" x 6BA " "	4c	4.80
6BA hex. nut	6c	9.60
6BA washer	3c	4.00

STEEL NUTS AND BOLTS

1/8" WHITWORTH ROUND HEAD, ZINC PLATED

Length	Each	200 Pack
3/8"	1c	1.60
1/2"	1c	1.70
1"	2c	1.80
1/8" hex. nut	1c	1.40
1/8" shakeproof washer	1c	(3.50 per thousand)
1/8" flat metal washer	1c	.90

B.A. SIZE, CHEESE HEAD

	Each	200 Pack
1/4" x 4BA	1c	1.70
4BA hex. nuts (brass)	2c	2.20
1/4" x 6BA	1c	1.80
6BA hex. nuts (brass)	2c	2.00
6BA shakeproof washer	1c	(3.50 per thousand)
1/4" x 8BA (brass)	4c	5.60
8BA hex. nut (brass)	2c	2.00

SELF-TAPPING SCREWS, CADMIUM-PLATED STEEL

	Each	200 Pack
No. 4 x 1/4" long (No. 40 drill hole)	2c	2.20
No. 8 x 3/8" (No. 30 drill hole)	2c	2.40
No. 8 x 1/2"	2c	2.60
No. 8 x 1"	2c	2.80

SPACERS

HARWIN SPACERS AND BRACKETS Made in England from extremely high quality materials. Spacers are in nickel plated brass. Brackets in mild steel with cadmium plating. (To make spacers of different lengths simply stack.)

Round 4BA (1/8) clearance hole, 1/4" OD.

Type	Length	1 - 9	10 up
R4081	1/4	\$.04c	\$.03c
R4082	3/8	.05c	.04c
R4083	1/2	.06c	.05c
R4087	1	.08c	.06c

Hexagonal 4BA tapped, 1/4" OD.

Type	Length	1 - 9	10 up
R4092	3/8	\$.06c	\$.05c
R4093	1/2	.08c	.06c
R4097	1	.12c	.10c

Insulated spacers tapped 1/8" Whitworth

Type	Length	1 - 9	10 up
	1/2"	\$.20c	\$.16c
	1"	.24c	.20c

Harwin brackets 4BA clearance holes

Type	Length	1 - 9	10 up
R4002	1/2"	\$.05c	\$.04c
R4012	2"	.08c	.07c
R4017	2 1/4"	.10c	.08c

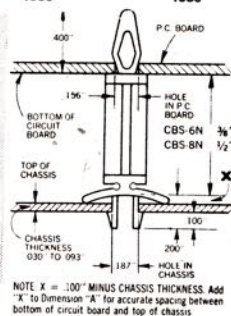


GENERAL ELECTRONIC SERVICES PTY. LTD.

RICHCO CABLE CLAMP

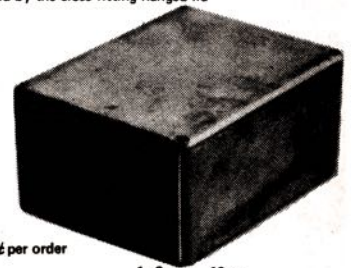
Heavy duty nylon cable clamps

N4 (For cables up to 1/4" diameter)
N6 (For cables up to 3/8" diameter)



BOXES — INSTRUMENT

These substantially made boxes are invaluable for many purposes and numerous applications will be found for them in the construction of electronic, radio and electrical apparatus. A high degree of electrical screening results from the thickness of the walls (average thickness 3/32") aided by the close fitting flanged lid supplied.



	P&P 50¢ per order	1-9	10 up
042 AOO	4 1/4" L x 2 1/4" W x 1 1/4" D	\$2.85	\$2.45
043 AOO	4 1/4" L x 3 1/4" W x 1 1/4" D	2.20	1.90
043 BOO	4 1/4" L x 3 1/4" W x 2" D	2.85	2.45
064 AOO	6 1/4" L x 4 1/4" W x 2" D	3.60	3.35
085 AOO	8 1/4" L x 5 1/4" W x 2" D	5.50	4.95
085 BOO	8 1/4" L x 5 1/4" W x 4" D	6.90	6.00
106 AOO	10 1/4" L x 5 1/4" W x 4" D	9.90	9.00

ALUMINIUM CHASSIS — 16 Gauge

BLANK ALUMINIUM SHEET — 16 Gauge
Ideal for heat sink, chassis, cases etc. 12" x 12" \$1.00

L x W x D	
6" x 4" x 2"	\$1.65
8" x 5" x 2 1/2"	2.56
10" x 6" x 2 1/2"	3.10

P&P 50¢

ALUMINIUM BOXES



Ideal for mounting all small instruments, power supplies etc. P&P 50¢



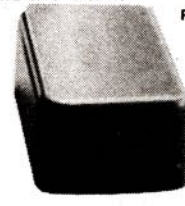
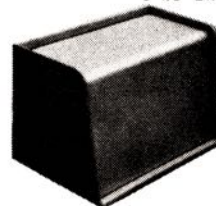
Type	Width x Height x Depth	1 - 9	10 up
3	3 1/4 x 2 1/4 x 1 1/4	.90	.85
5	4 x 2 x 2 1/4	1.30	1.10
6	4 x 2 1/8 x 1 1/8 - 5/8	1.30	1.10
7	4 x 2 1/4 x 2 1/4	1.35	1.15
9	5 x 2 1/4 x 2 1/4	1.50	1.35
10	5 x 4 x 3	1.90	1.75
11	5 1/4 x 3 x 2 1/8	1.90	1.75
12	5 1/4 x 4 1/4 x 3 1/4	2.45	2.20
13	6 1/4 x 5 1/4 x 3 1/4	2.55	2.35
14	7 x 6 x 4 1/4	2.90	2.65
16A	4 x 4 x 2 1/4	1.90	1.75
SF-6	6 x 6 x 6 Sloping Front Case	3.75	3.50

BOXES — PLASTIC

A grey plastic box with bakelite lid, ideal for hundreds of applications.

4 5/8" L x 2 1/2" W x 1 3/8" D (SPC)	1.15
6 1/8" L x 3 3/16" W x 2 9/16" D (LPC)	1.50

P&P 30¢



A.T.C. An attractive grey plastic case with sloping front of anodised aluminium — ideal for small instruments, power supplies, meter boxes etc. Supplied complete with panel mounting screws.

Dimensions 7" L x 5" W x 4 1/4" H

\$4.20 P&P 50¢

A.T.C. 754 Similar to above in black marvplate

\$5.35

CABINETS — PARTS DRAWERS



Capstan brand cabinets with the following features — finished in rustproof zinc steel and coated in grey enamel — special lip on back of drawer prevents drawer falling out when in use — additional cabinets can be simply slid on and locked by tongue and slot — cabinets can be hung on wall to conserve bench space — supplied complete with dividers (to make 12 compartments) and labels.

Model	Dimensions	No. of drawers	Price
JS4A	11 1/2" W x 2" H x 6" D	4	\$1.85 P&P 50c
JS4C	11 1/2" W x 3" H x 6" D	4	\$2.70

CIRCUIT BOARD SUPPORTS

Designed to hold printed circuit board in position with sufficient clearance above the chassis. They snap into place, made of nylon, easily installed and removed by hand.

Distributed by: Warburton Franki Pty. Ltd.

	1 - 99	100 up
CBS-6N Length (A) 3/8"	\$.06c	\$.04c
CBS-8N Length (A) 1/2"	.07c	.06c

McMURDO

CONNECTORS, PLUGS, SOCKETS ETC.

Red Range Connectors — barrier polarised feature gold plated contacts (800 volt, 5 amp rating) stainless steel mounting plates, silver anodised aluminium covers. A range of connectors of extremely high quality.

16 Way (Dimensions approx. 2 1/4" L x 3/4" W)

	1-4	5 up
RP16 Plug	\$2.60	\$2.32
RS16 Socket	\$2.60	2.32
RP16/RS16 Combination	\$4.90	4.41
RC116 (Cover for plug or socket)	\$4.37	3.75

24 Way (Dimensions approx. 3 1/4" L x 3/4" W)

RP24 Plug	\$3.60	\$3.10
RS24 Socket	\$3.60	3.10
RP24/RS24 Combination	\$6.60	5.91
RC124 Cover for plug or socket	\$4.50	3.94

Strip Connectors

A range of inexpensive "in-line" plugs and sockets suited for both printed circuit or conventional applications — covers available — contacts are of silver plated brass (750 volts at 5 amps) ideal for cable connectors and extremely popular for mounting P.C. matrix or veroboard to chassis etc.

6 Way (Dimensions approx. 1 3/4" L x 1/4" W)

	1-9	10 up
PP6 Plug	\$1.20	\$1.00
PS6 Socket	.75c	.65c
PPC6 Plug Cover	1.90	1.50
PC6 Socket Cover	1.80	1.50

10 Way (Dimensions approx. 2 1/2" L x 1/4" W)

PP10 Plug	\$1.65	\$1.40
PS10 Socket	1.00	.80c
PPC10 Plug Cover	1.95	1.80
PC10 Socket Cover	1.80	1.60

Redline P.C. Edge Connectors

Designed for convenient "plug-in" connection of 1/16" thick P.C. or veroboard. Available in 0.1" and 0.15" spacing, contacts of gold plated tintillate bronze, rated at 5 amps D.C. Supplied complete with mounting feet and polarising key. May be mounted in line to increase contact number.

.1" Contact Spacing

	1-9	10 up
16 Way	.96c	.80c
24 Way	\$1.50	1.20

.15 Contact Spacing

16 Way	1.00	.84c
24 Way	1.60	1.45

Redline Edge Connector Kit — contains complete kit of parts for making Redline Series Connectors.

.1 Pitch	1336502 (80 contacts)	\$3.79
.15 Pitch	1336602 (70 contacts)	3.79

OCTOPLUS RANGE 8 Way and 11 Way Connectors

A range of inexpensive plugs and sockets based on the international "octal" type valve socket. Bright tin plated pins give extremely low contact resistance (below .003 ohms) at 5 amps current rating.

8 Way Series

	1-9	10 up
LB/USP1 Line Plug	\$0.30c	\$0.26c
BB/USP1 Line Socket	.24c	.20c
C8/USP Chassis Plug	.24c	.20c
NB/FU Chassis Socket	.20	.16
L8 Plug Cover	.20	.16
U8 Socket Cover	.20	.16

11 Way Series

BL11/UUP1 Line Plug	.48c	.44c
B11/USP1 Line Socket	.35	.32
B11/U Chassis Socket	.35	.32

LB and UB Covers suit above.

Q RANGE MINIATURE POLARISED PLUGS & SOCKETS

Ideal for low cost speaker, microphone or audio connections.

2 Way

2QS/NF Chassis Socket	\$0.16c	\$0.13c
20P/B Line Plug	.13c	.11c

4 Way

4QP/B Line Plug	\$0.13c	\$0.10c
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(Use 5 pin socket — see below)

5 Way

5QP/B Line Plug	\$0.17c	\$0.13c
5QS/B Line Socket	.18c	.16c
5QS/NF Chassis Socket	.18c	.16c

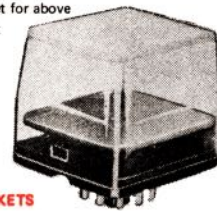
Covers for above (4 way and 5 way)

Q5 Black Plastic Line Cover	\$0.07c	\$0.06c
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MODULES & SOCKETS

1505 11 Pin plug with a transparent polycarbonate cover. Dimensions 1 1/2" square x 1 1/2" high. Contacts have 500 volt 3 amp rating — ideal for all "module" construction — suitable for encapsulation.

	1-9	10 up
B11/U Chassis Socket for above	\$2.10	\$1.90
908 Terminal Socket	.35	.32
	2.90	2.20



TRANSISTOR SOCKETS

TO18 type gold plated (BC108 etc.) .35c
TO 5 type (TT3638 etc.) .30c

TRANSISTOR MOUNTING KIT (TO3 CASE) TO3 Type comprising of Mica Washer and two insulated Mounting Washers 15c each



TO3 INSULATED CAP \$0.20c



TO3 SOCKET \$0.22 c

CRYSTAL SOCKET

Type D (P2UW) \$0.25c
Type K (N2UE) \$0.28c

CANNON CONNECTORS

XLP-3-11C	3 pin line socket	\$1.85
XLP-3-32	3 pin chassis plug	1.50
XLP-3-12C	3 pin line plug	1.85

CAR RADIO PLUG & SOCKETS

R1 Standard aerial plug	.30c
R2 Bayonet aerial plug	60c
R3 Adapter — standard plug to bayonet	1.20c
R5 Standard nylon fuse holder (in-line)	50c

COAXIAL PLUGS & SOCKETS

	1-9	10 up
PL259 UHF type line plug (for UR67 or RG58R coax)	\$0.98	\$0.94
C32-276 UHF chassis mounting socket	.98	.94
B.N.C. type line plug (suit RG58R coax)	1.15	1.05
B.N.C. type chassis socket (female)	1.60	1.40
Belling Lee L734/P line plug	.45	.40
Belling Lee L734/J line socket	.50	.45
Belling Lee L604/S chassis socket	.40	.35
Belling Lee L616 "Joiner"	.40	.35
UG175 adapting piece to allow for RG58R coax in PL259 plug	\$0.45c	

MAINS PLUGS AND SOCKETS

Clipsal 439D 3 pin line plug with extension cord grip, grey	\$0.28c
As above "Piggy Back" type	.48c
438 3 pin line socket, grey	.48c
Clipsal 412A 3 pin surface socket	
(for drill speed controller, musical etc.)	\$0.45 c
DS4040 2 pin 115 Type plug suit imported amplifiers (American parallel pin)	\$0.25c

OUTILUX

CONNECTORS

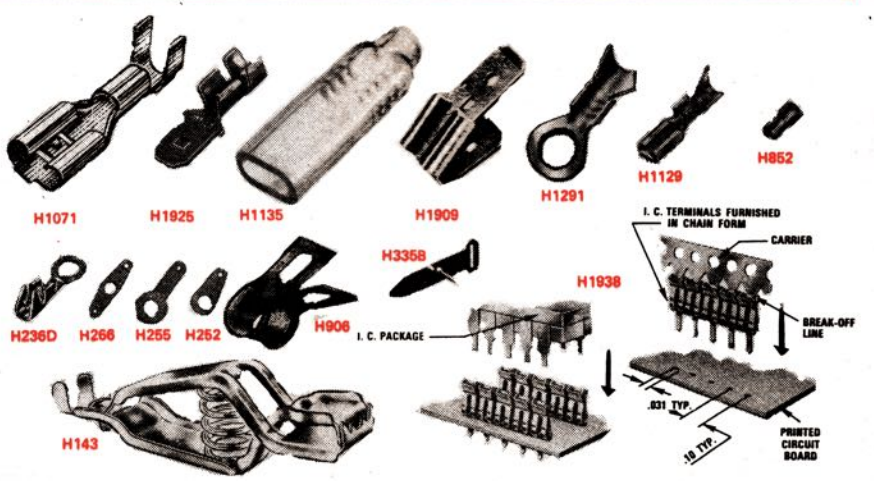
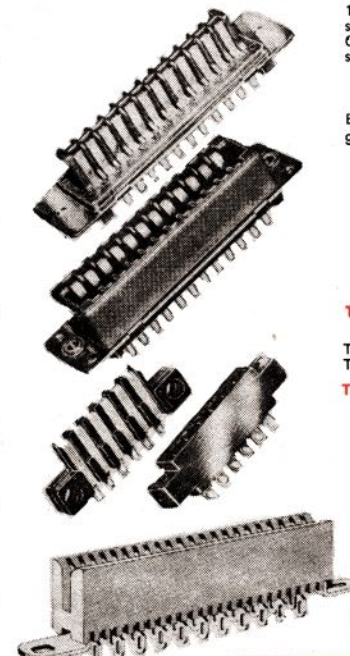
	Quantity per Handy Pack	Price per Handy Pack	Price per Box of 150
H1071 Quick Connector	25	75c	\$3.00
H1925 Male for above	25	88c	3.50
H1135 Cover for 1081 and 1925	25	65c	2.60
H1909 Double Adapter	25	\$1.15	5.25
H1291 Round Lug	25	65c	2.10
H1129 Min. Connector (for Speakers etc.)	25	52c	2.00
H852 Bullet Connector	25	75c	2.80

LUGS & CLAMPS

	Quantity per Handy Pack	Price per Handy Pack	Price per Box of 150
H236D Large Battery Lug (3/8" hole)	25	\$1.78	\$7.90
H266 Double Ended 1/8"	50	50c	—
H255 Standard 1/8" hole	50	58c	—
H252 Small 1/8" hole	50	50c	—
H906 Cable Clamp	10	65c	\$5.20
H3358 Pin Clip — Brass	20	40c	2.00

MISCELLANEOUS

H143 Battery Clip	2	52c
H1938-4/50 .1" Spacing "IC" Socket (50 lugs)	1	\$1.00



PLUGS & SOCKETS

We stock a huge range of plugs and sockets for a wide range of uses. All are of heavy duty design, all terminals are pre-tinned for ease of soldering.

Phone Plugs

P.1. sub miniature phone plug 2.5 mm white 15¢
P.2 Miniature phone plug 3.2 mm white 20¢
P.3 Easy to solder version of P2 25¢
P.4 P.M.G. type phone plug large 6.5 mm suit headphones etc. 50¢
PS4 Stereo Version of above 6.5 mm suit stereo headphones, stereo cables etc. 65¢

Phone Sockets

J.1 Panel jack for P.1 complete with closed circuit switch and nut 15¢
J.2 Panel jack for P.2 (3.5mm) complete with closed circuit switch and mounting nut 20¢
C.3 in-line version of above 18¢
J.4 Panel jack for P.4 - 6.5mm including closed switch and nut 34¢
C.44 in-line version of J.4 46¢
JS4 Panel jack to suit PS4 - full stereo, 6.5 mm closed circuit switch 44¢
CS44 in-line version of JS4 55¢

R.C.A. Type Plugs and Sockets

LC2 plug with bakelite cover - red or black 24¢
LC1 in-line socket for LC2 - red or black 25¢
M698 Panel socket complete with metal plug 20¢
M423 Twin panel sockets. Pre-mounted complete with two plugs (excellent for such dual signal applications as stereo equipment) 30¢

"DIN" EUROPEAN AUDIO CONNECTORS

Made to "DIN" specifications, fully shielded with plastic "pull-on" covers - suit Philips, Grundig, Telefunken etc.

DP3 3 pin line plug 32¢
DS3 3 pin panel socket for DP3 25¢
DL3 3 pin in-line socket for DP3 36¢
DP5 5 pin line plug (A or B) 43¢
DS5 5 pin panel socket suit DP5 (A or B) 30¢
DL5 5 pin in-line socket suit DP5 (A or B) 48¢
DP2 2 pin plug suit speaker etc. 25¢
DS2 2 pin panel socket suit DP2 20¢
DL2 2 pin in-line socket suit DP2 30¢

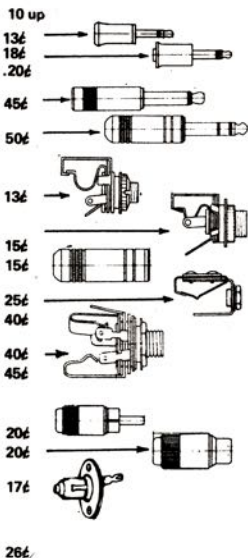
MISCELLANEOUS PLUGS AND SOCKETS

DC-1 Japanese-type DC power plug 2.1mm hole 22¢
DJ-1 panel socket for DC-1 44¢
DC-2 as for DC-1 but with 2.5mm hole 22¢
DJ-2 panel socket for DC-2 44¢

CI-1 car cigarette lighter plug. Extremely handy for operating recorders in your vehicle 50¢

VALVE SOCKETS

Standard 7 pin miniature valve socket 22¢
Standard 9 pin miniature valve socket 22¢
Standard Octal miniature valve socket 35¢



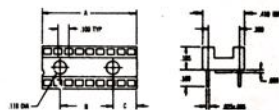
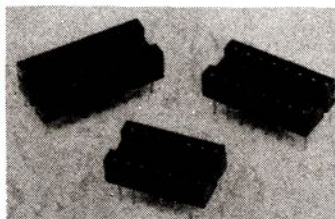
ROBINSON NUGENT IC SOCKETS

Manufactured from glass-filled, black nylon in one piece, they feature beryllium copper contacts which are gold plated (not flashed!) on nickel. They are the most professional socket anywhere at a very reasonable price.

DUAL IN LINE IC SOCKETS

083-S3 8-pin MiniDIP
143-S3 14-pin
163-S3 16-pin
183-S3 18-pin
246-S2 24-pin

1 - 9 \$ 50c
10 up \$ 45c
60c
70c
75c
1.00
80c



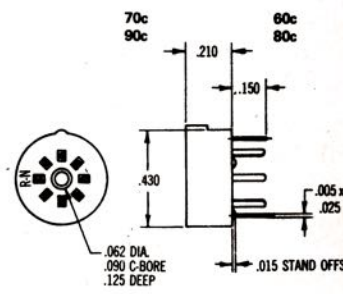
PART NO.	No. of Contacts	A	B	C
ICN-083-S3	8	395	—	—
ICN-143-S3	14	695	500	113
ICN-163-S3	16	795	500	163
ICN-183-S3	18	895	500	213

TO-5 Type Round IC sockets

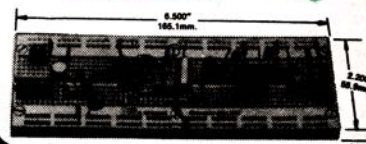
SN5178 8-pin
SN51710 10-pin



PART NO.	NO. CONTACTS	CONTACT CIRCLE DIA.	TERMINATION CIRCLE DIA.
SN-5178	8	.200	.350
SN-51710-23	10	.230	.380



GENERAL ELECTRONIC SERVICES PTY. LTD.



Australian Distributor :

GENERAL ELECTRONIC SERVICES PTY. LTD.

TERMINALS

from.. TANNER-JAMES

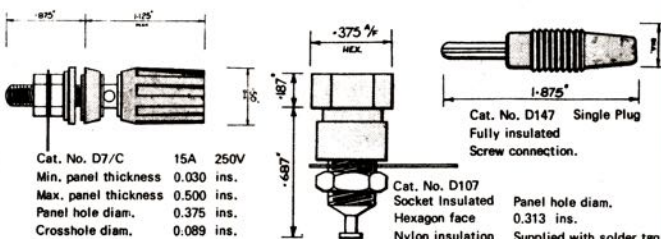
WARBURTON FRANKI

made in Australia from Nickel-plated brass. Available in Red, Black, Blue or Green.

D7/C combines a terminal with 4mm banana socket. Rated at 15A at 240V AC and ideal for use in Test Instruments 1 - 9 .55c 10 up .46c

D107 is a 4mm panel mounting Banana socket. Requires 0.3" hole. Nylon insulated and complete with solder tag. 1 - 9 .28c 10 up .24c

D147 4mm Banana plug with screw or solder connection. 1 - 9 .34c 10 up .30c



JABEL Spring type with a full 15A rating at 250V (yes they're very hard to upset). Very popular for aerial and earth connections. You've probably got them on your t.v. set since all major manufacturers use them. State colour Red, Black or Green.

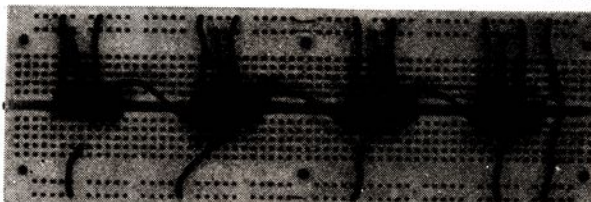
1 - 9 \$0.25c 10 up \$0.20c

EL INSTRUMENTS INCORPORATED

Precision molded high impact plastic housing.
Non corrosive, high tensile strength spring contacts.
Accepts wire gauges from # 22 to # 26 and maintains minimum contact resistance over the range.
Expected contact life over 10,000 insertions.
Signal Circuit frequencies in excess of 30 MHz can be accommodated.

E1-SOCKET PLUG-IN BREADBOARD No more birds nests that short out and ruin valuable components. No more components ruined by repeated soldering and unsoldering. No more circuits that don't work because you can't follow the birds nest. Now with the SK-10 you simply plug the parts into the board - ICs, transistors, capacitors, resistors etc all plug-in to the holes. D.I.P. ICs allow 4 connections per pin. The centre connections are in columns of five, the outer connections in rows of 25. Contact life in excess of 10,000 insertions, signal frequencies up to 30MHz. Accepts wires from 22 to 26 gauge. \$26.00 (P&P 50c)

Ideal for IC lash-ups.



HEATSINKS

From world famous Redpoint UK. Semiconductor reliability is halved for every 10°C rise over 50°C due to junction heat sensitivity. A proper heatsink overcomes this problem. The Redpoint range has been designed to meet every requirement from push-on radiators to large machined heatsinks since 1959.

All components are made from aluminium alloy chosen for its high thermal conductivity and anodised where necessary to improve performance.

Typical Ratings	
Transistor direct to sink with lubricant	0.2°C/Watt
Transistor on mica washer	0.5°C/Watt
Transistor on beryllia washer	0.2°C/Watt

Other factors:

Powersinks not mounted vertically can worsen ratings up to 20%
Powersinks not black anodised can worsen ratings by up to 15%
Omission of jointing compound can worsen ratings by up to 40%

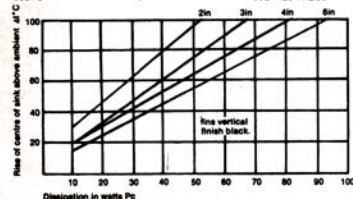
Redpoint

Type	1-9	10 up
Type 8F for TO-5 transistors (2N3638 etc) Black anodised, push on lobed radiators Thermal rating 50°C/Watt	\$ 25c	\$ 20c
Type 18F for TO-18 (BC108 etc) Black anodised push on lobed radiator Thermal rating 50°C/Watt	25c	20c
TV-2 Powerfin for TO-66 (2N3054 etc) Black anodised 1.5" L x 1.06" W x .87" H Thermal rating 10.5°C/Watt	60c	50c
TV-3 Powerfin for TO-3 (2N3055 etc) A twisted vane design uses total metal content of base length to radiate Black anodised 1.5" L x 1.65" W x 1.0" H Thermal rating 7.2°C/Watt	60c	50c
TV-4 Powerfin for plastic power devices (e.g. SC146D triac etc) Black anodised, finned height only 0.75" Thermal rating 17°C/Watt	60c	50c
DIP10/2 Powerfin for Plessey SL403D etc Audio amps etc Thermal rating 8.2°C/Watt	50c	45c

W TYPE POWER HEATSINKS This heavy duty heatsink is very popular with professional and amateur users alike. It can be mounted easily and its thermal rating ensures reliable operation of associated transistors. All heatsinks will take a slide on cover which can be made from aluminium. Supplied undrilled.

Dimensions 1 1/4" H x 5.12" W in the following lengths:

Type	Length	Thermal Rating	1-9	10 up
2W-1	2"	1.9°C/Watt	\$1.25	\$1.10
3W-1	3"	1.5°C/Watt	\$1.75	\$1.60
4W-1	4"	1.3°C/Watt	\$2.20	\$2.00



Y-TYPE POWERSINKS A compact design for moderate power requirements particularly on PC boards. They will also take a cover. Finished in anodised black, undrilled.

Dimensions 0.63" H x 2.36" W in the following lengths:

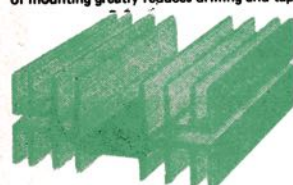
Type	Length	Thermal Rating	1-9	10 up
2Y-1	2"	6.2°C/Watt	\$ 75c	\$ 65c
3Y-1	3"	4.8°C/Watt	95c	85c
4Y-1	4"	3.9°C/Watt	\$1.20	\$1.10

For Redpoint silicon joint compound see section on Servicing Aids.

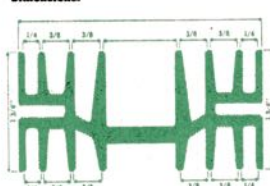


Flag type for OC74, AC128 type transistors	1-9	10 up
BYX21L diode heat sink clamp	\$0.06	\$0.05
	0.40	0.35

MINI FIN ANODISED HEAT EXCHANGER Has been designed specifically for natural or forced cooling of medium or high power transistors. The fluted profile gives a 46" perimeter ensuring excellent dissipation in any length. The off-set web position allows back-to-back positioning to create an even tunnelling arrangement. Perhaps the greatest feature is the fact that the outer 6 channels have been designed to accept a 1/4", 20 UNC bolt without drilling. This very effective method of mounting greatly reduces drilling and tapping.



Dimensions:



Typical figures for a 4" length under natural convection:

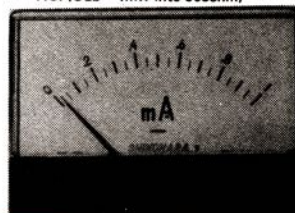
	1-9	10 up
Dissipation 100W : temperature rise above ambient is 160°C	2" \$1.40	\$1.20
50W	3" \$1.75	\$1.60
	4" \$2.20	\$2.00
	6" \$2.90	\$2.70
Thermal resistance : 0.9°C/Watt.	All P & P	.30c

METERS—PANEL MOUNTING

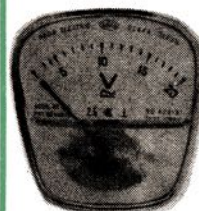
NEW PANEL METERS BY SHINOHARA The SD range is a high quality precision moving coil meter with a full scale accuracy better than 2%. They all feature the needle pointer with zero adjustment and have provision for internal illumination (miniature bulb required). Finish is clear perspex with black lower section. Mounting by four bolts (nuts supplied)

SD640	(2.5" High x 3.3" Wide)	1-9	10 up
0-50uA		\$7.50	\$7.00
0-1mA		\$6.90	\$6.50
SD460	(1.8" High x 2.3" Wide)		
0-50uA		\$6.90	\$6.50
0-1mA		\$5.75	\$5.50
V.U. (Odb = 1mW into 600ohm)		\$6.95	\$6.55

(P&P 50c each)



Australian Distributor: Warburton Franki



Moving Iron type, extremely accurate AC/DC. Meters - ideal for power supplies etc.

ARG-456 2" oval 0-20 Volts
0-10 Amp

\$3.95 each (P&P 50c)



EDGE METERS - Hole cutout 1-3/8" x 5/8"

PV31 Level indicator
(410 ohm @ 400 uA Full Scale)

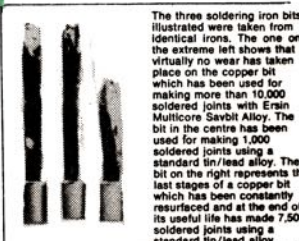
\$3.95 each P&P .50c

SOLDER

We only stock the world's best - Multicore Savbit. It's just not worth trying to cut corners because you only get dry joints and trouble. Ersin Multicore Savbit has been specially formulated to overcome the problems of normal solders using tin/lead alloys which dissolve copper. Savbit is an alloy to which a precise amount of copper has been added so that the solder does not absorb copper during the soldering process. Savbit alloy therefore minimises corrosion of copper soldering iron bits and eliminates the need for constant resurfacing. The life of an ordinary iron bit can be increased by as much as ten times by using this solder. Also by keeping the iron in good condition, soldering speed and efficiency are improved. Savbit is also ideal for soldering fine copper wires which might be eroded or broken by normal solders.

The actual construction of the solder is also worth describing. Multicore gets its name from the five cores of extra-active, non-corrosive flux precisely located within the solder so that there is a minute wall of solder between them and the work. This construction keeps the flux at the heat source so it melts faster and wets the joint more effectively. So the result is a much more reliable joint. Available in various gauges, in 500g boxes. (500g is about 10% more than 1lb)

	1-9	10 up
16swg general purpose hobbyist, electrical engineers, service use etc.	3.00	2.80
18swg slightly finer for general use	3.20	2.80
22swg finest for working with transistors, ICs and other delicate parts	4.50	4.20
Experimenters coil, 12ft of 16swg	P & P 75c per box, \$2 per order	50c



The three soldering iron bits illustrated were taken from identical irons. The one on the extreme left shows that virtually no wear has taken place on the copper bit which has been used for making more than 10,000 soldered joints with Ersin Multicore Savbit Alloy. The bit in the center has been used for making 1,000 soldered joints using a standard tin/lead alloy. The bit on the right represents the last stages of a copper bit which has been constantly resurfaced and at the end of its useful life has made 7,500 soldered joints using a standard tin/lead alloy.

Ersin Flux.

The Ersin Flux contained in the cores of Ersin Multicore Solder is carefully manufactured under laboratory-controlled conditions prior to being incorporated in the solder cores. The flux is a chemical compound containing a high grade rosin which has been subjected to a complex chemical process to increase its fluxing action to the highest possible degree without impairing in any way the well-known non-corrosive and protective properties of the original rosin. In effect, rosin as a flux suffices only as an agent to avoid oxidation during soldering, whereas Ersin Flux will not only remove surface oxides, but also prevent their further formation during the soldering operation. Soldered joints made with Ersin Multicore Solder do not corrode even after prolonged exposure to any degree of humidity. Ersin Flux complies with British and U.S.A. Government specifications.



Australian distributor:
Greendale Engineering.

The World's Finest Cored Solder.

In 63 countries of the world ERSIN MULTICORE is widely used in electrical and electronic industries. MULTICORE products meet all appropriate national specifications and every delivery is completely guaranteed.

SERVICING AIDS



CROWN AEROSOL SERVICE AIDS P&P 75c

2004 Tri-Fix Electronic Grade Solvent supplied with Spray 'into potentiometer cleaner device	\$2.25
2002 Replacement can only for above	1.52
6004 Clear Acrylic Plastic Spray	2.05
7050 Zinc Chromate Primer	1.60
8035 Silx-It Silicon Lubricant — ideal for cassettes etc.	2.00
8077 Switch and Contact Cleaner Lube	2.50
9050 Freez-It — ideal for fault finding	2.50
2001 Anti-Static Record Cleaner with free cloth	1.50



PLESSEY

SPRAY TOOL P&P 75c

A miniature spray gun powered by inert gas — ideal for all small jobs on instrument cases, etc., will spray any liquid. \$4.50

Replacement propellant can for above \$2.20

THE PERFECT DESOLDERING AID

QUICK AND ECONOMICAL

SOLDER TAUL TANGENT
can be used on all sizes of electronic solder joints and electrical connections from printed circuit boards and integrated circuits to cable connections. It can be used to remove solder from wrongly inserted components; for removal of solder bridges after wave or dip soldering; for removal of excess solder; for removal of solder from plated through holes.

SOLDER TAUL
is fast and efficient as soon as the solder is molten it is immediately soaked up by the towel action, leaving a clean, solder-free hole or joint. \$1.40

Australian Distributor :
Tangent Electronic Sales Co.

tele-fix calculator

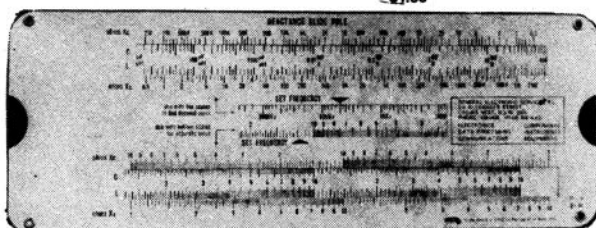
THE TELEFIX is designed to be easily operated by the average TV. set owner, or the hobbyist in electronics and will, we believe, be of help to the professional TV. serviceman. It enables the user to quickly and accurately identify valve induced picture faults. All common faults caused by valves are shown clearly on the Calculator. Such faults have been estimated to cause over 90% of TV. service calls.

\$2.00 each

REACTANCE SLIDE RULE Saves you all the slog of using your ordinary slide rule to work out reactances etc. Covers 1Hz to 100MHz giving both capacitive and inductive reactances. On the back a host of useful information, circuit formulae, wire resistances, coax cable formulae, spark distances, transformers etc. etc. Highly recommended for engineers and students alike.

Australian Distributor : General Electronic Services

\$1.50



SILICON HEATSINK JOINT COMPOUND - Thermopath 167. When mounting semiconductors this compound improves the thermal resistance by up to 40%. The tiny airgaps are filled. The compound is stable over a very wide temperature range and maintains insulation.

Australian Distributor : General Electronic Services

Thermal rating approx 0.05°C/Watt/0.001"

Properties	2-7
Specific gravity	16.7 x 10 ⁻³ cal/cm sec°C
Thermal conductivity	280v/0.001in
Dielectric strength	7 days at 20°C, 0-1%
Bleed	24 hours at 200°C, 0-2%
Volume resistivity	At 20°C, 1-1 x 10 ¹⁰ ohm cm
	at 177°C, 4-3 x 10 ¹⁰ ohm cm

12gm vial

\$ 75c

Thermopath 167

ARALDITE ADHESIVE

Tested and proven, a must for every workshop, full instructions, heatproof, waterproof, enormously strong.

1 oz. Pack

\$0.98

RESIWELD 5 Clear epoxy adhesive, sets in 5 minutes, heatproof, enormously strong. \$0.98

SELLEYS KWIK GRIP CONTACT ADHESIVE

Suitable for bonding laminated plastics, rubber, leather, speaker fabric, canvas, almost anything.

Large Tube 5 oz.

\$0.80

SUPER SERVISOL

Switch and contact cleaning lubricant in pressure can, does not attack most plastics, rubber, etc., cleans without dismantling.

8 ozs.

\$1.50 (P&P 75c)



"DUPONT" FREON SOLVENTS are widely used throughout the Commonwealth by defence forces together with all major electrical and electronic organisations.

FREON TF quickly cleans a wide range of electric and electronic components switchgear, relays, computer heads, video tape, projector and camera equipment, radio pots & cassettes.

FREON TF leaves no residue, is non toxic, non-explosive & non-flammable. Does not attack rubber, plastics paint or metals.

FREON TF 16-oz can \$2.70
(P&P 75c)

"Freon"—TF. Degreaser cleans delicate circuitry quickly and safely. Since it affects only grease and oil, it is safe for use on all materials of construction, such as epoxies, phenolics, silicones, nylons, polyesters, surface coatings and varnishes, rubber, paper and metals. As a spray, it provides a constant source of fresh solvent — preventing the contamination so often a problem with dipping and bath cleaning techniques.

"Freon"—TF. Offers a unique combination of high oil solvency with a pronounced washing action due to a low surface tension (19.0 dynes/cm @ 77°F.) and the flushing character inherent in the aerosol spray.

"Freon"—TF. Spray is completely volatile — it evaporates fast (boiling point 117.6°F.) and clean, leaving no residue. Non-conductive, "Freon"—TF can be used even on running equipment without fear of fire or shorting. Completely displaces water from electrical equipment making it immediately operational.

Advantages

- A cleaning agent which restores electrical or mechanical continuity on all types of contacts.
- Removes dirt — oil — grease — oxidation and operating erosion dust.
- Does not attack plastic, rubber, paints or metal.
- Leaves no residue (maximum nonvolatile residue of 2 ppm by weight).
- Nonexplosive and nonflammable, "Freon" cleaning agents are relatively nontoxic having a TLV rating of 1000 ppm — the highest available.

Instantly freezes small parts up to -50°C for shrink fitting shafts, pins, bushings, etc. Finding faulty electronic connections and components. Also protects adjoining parts while soldering.

15 Oz. Pressure Can

\$2.50
P&P 50c

Marketed by : F.C. Lovelock Pty. Ltd.
in all states.

GENSIL 21A

Electrical Insulating compound, ideal for all insulation problems — Silicon.

% oz. tube

\$1.20

PCL CIRCUIT LACQUER-SPRAY Has been specially designed to protect circuit boards and prevent corrosion. Acts as a flux when soldering to give more reliable joints.

\$3.10 each P&P 75c

CRC 226 A very popular spray to prevent malfunction due to the effects of moisture etc. Very good sealant, never dries, improves switch contacts etc. good lubricant. You need a can! Only \$3.00 P&P 75c

TRANSFORMERS



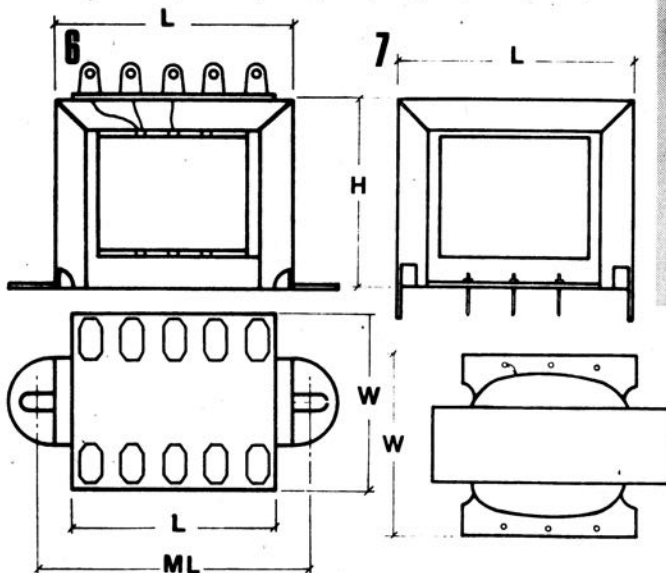
FERGUSON TRANSFORMERS Over the years this Australian company has built up a considerable reputation as a leading manufacturer. We have sold thousands of Ferguson transformers and have never ever received one back because of a manufacturing fault. They are highly recommended.

LOW VOLTAGE EQUIPMENT TRANSFORMERS (all 240V primary)

Type	Secondary	Outline	H	W	L	Mounting Centres	Price	P&P
PF1728	6.3V-1.1A 6.3V 1.1A or 12.6V-1.1A CT if in series 6.3V-2.2A If in parallel	6	2	1.7/8	2.3/8	2.13/16	\$5.25	\$.75c
PF2315	6.3V-1.2A	6	1 1/2	1.13/16	1.3/8	2.13/16	4.85	.50c
PF1630	6.3V-2.25A CT	6	2	1.7/8	2.3/8	2.13/16	6.00	.75c
PF2565	12.6V-0.5A, 12.6V-0.5A or 25V-0.5A CT if in series 12.6V-1A if in parallel	6	2	1.7/8	2.3/8	2.13/16	5.85	.75c
PF2851	12.6V-0.15A CT	6	1.5/16	1.9/16	1.1/4	2.1/16	4.40	.30c
PF2155	15V, 12.5V, 9.5V, 8.5V, 7.5V, 6.3V at 1A	7	2	1.7/8	2.3/8	2.13/16	6.75	.75c
PF2876	64V-2A CT						9.75	.75c

FILTER CHOKES (All P&P 75c)

Type	Inductance at DC rating		DC Res	Outline	H	Dimensions			Price
						W	L	M	
F14/60	14H	60mA	460ohm	6	1.3/4	1.3/8	1.13/16	2.1/2	\$3.60
F2.5/200	2.5	200	71	6	2	1.7/8	2.3/8	2.13/16	3.60
F1/300	1	300	30	6	2	1.7/8	2.3/8	2.13/16	3.60
CF435	0.030	1.25A	1.4	6	1.3/8	1.1/16	1.5/8	2.13/16	2.75



A&R LOW VOLTAGE POWER SUPPLY TRANSFORMERS (all 240 primary)

Model	Current	Secondary Volts	Price	P&P
2155	1A	6.3, 7.5, 8.5, 9.5, 12.6, 15	\$5.10	\$.75c
6978	2A	6.3, 7.5, 9, 10.5, 12.6, 15 (15CT)	7.80	.75c
5503	4A	17, 11.5 (Battery charger use)	10.50	1.00
6672	1A	30, 27.5, 24, 20, 17.5, 15	7.40	.75c
6474(2851)	150mA	12.6 CT	4.40	.30c
7243	2.4A	50, 40, 33, 25, 19 (50CT)	11.60	.75c
5509	5A or 2.5A	12.6 Or 25	8.00	.75c
5502	2.5A or 1.25A	22 or 44	7.35	.75c
9129	1A	30 CT	7.40	.75c
9343	25mA and 30mA	115 & 24	4.95	.50c

HT POWER TRANSFORMERS (all 240V primary)

Model	Current	LT Winding	Price	P&P
1992	30mA	150-0-150	6.20	\$.75c
1951	40mA	180-0-180	7.50	.75c

TRANSISTOR DRIVER AND OUTPUT TRANSFORMERS

Model	Impedance		Resistance		Price	P&P
	Primary	Secondary	Primary	Secondary		
TO3 Output	420CT	3.5	13.5	0.125	\$3.60	\$.30c
TD3 Driver	3000	1300CT	165	46	3.10	.30c

LOW HEIGHT POWER TRANSFORMERS These transformers comply to the relevant sections of AS C126 in respect of insulation and winding construction. All transformers in this range are for 240V 50 Hz connection, single phase nominally rated, at 20VA. Dimensions are identical with height limited to only 1 1/4", width 2 3/8" length 4 5/16" with mounting centres 23/32 x 3.27/32. Each transformer has two identical secondary windings which can be parallel or series connected. They are fitted with round pin terminations and are supplied with a set of six plug-on leads.

\$5.50 each (P&P 75c)

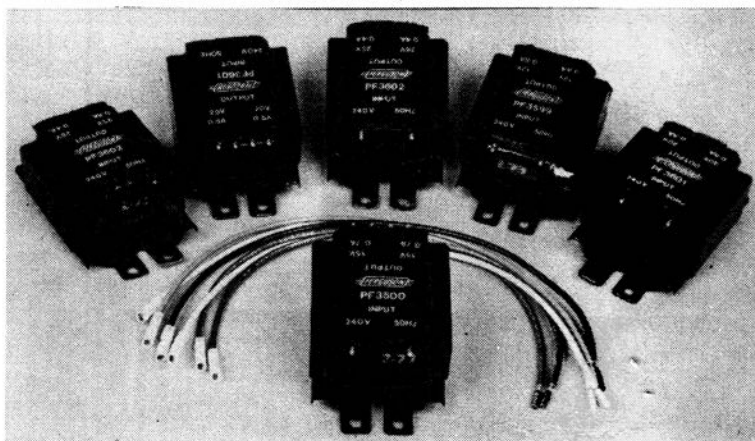
Type	Separate Winding	Rating	
		Series Winding	Parallel Winding
PF3596	2x 6V-1.7A	12V-1.7A	6V-3.4A
PF3597	2x 7.5V-1.3A	15V-1.3A	7.5V-2.6A
PF3598	2x 9V-1.1A	18V-1.1A	9V-2.2A
PF3599	2x 12V-0.85A	24V-0.85A	12V-1.7A
PF3600	2x 15V-0.69A	30V-0.69A	15V-1.38
PF3601	2x 20V-0.51A	40V-0.51A	20V-1A
PF3602	2x 25V-0.41A	50V-0.41A	25V-0.82A

Connections: Assume secondary is numbered 1-4 from left to right.

Separate Windings: Use 1 and 2, 3 and 4

Series connection: Join 2 and 3, use 1 and 4

Parallel connection: Join 1 and 3, 2 and 4, use 1 and 2.



OUTPUT TRANSFORMERS

Type	Nom. Watts	Impedance		Dimensions			Price	P&P
		Primary	Secondary	H	W	L		
E7/K3	5	7000	3	1.5/16	1.1/16	1.1/2 mounting centres 2"	\$2.25	\$.50c
E7/K15	5	7000	15					
E5/K3	5	5000	3					
E5/K15	5	5000	15					
OPM1A	10	7,000,5000 Single ended	15,8,3,2	2.5/16	2.1/4	2.3/4 Mounting 3.1/8	7.25	.75c
OPM7A	15	10,000,8000 7000 Push-Pull	15,8,3,2	3.5/16	2.5/8	3.1/8 Mounting 3.1/8	12.00	1.00

FERGUSON BATTERY CHARGER Extensive research by Australian transformer manufacturer has resulted in this very neat little 4Amp charger. It provides automatic charging of 12V batteries from flat to full-charge overnight. It is not a trickle charger but the most powerful for its size available in the world. Full wave circuit, double insulation with foolproof fusing. It is approved by Electricity Authority. Housed in an attractive, unbreakable plastic case measuring only 3 1/4" high, 3 3/4" wide and 5 1/4" long, it weighs only 3.8lb and has a built-in neon indicator. Guaranteed and highly recommended at

\$18.00 (P&P \$1.50)



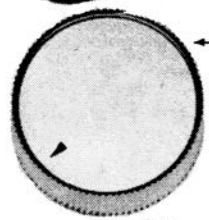
JABEL KNOBS

JABEL KNOBS Are diamond machined from solid metal with set screws conforming to AS standard 0.25" shafts. Finish is silver clear anodised. Slider type knobs and plastic inserts are moulded in ABS. (dimensions are given in mm, diameter x height)
Australian Distributor: Watkin Wynne Pty. Ltd.

			
WT1	Extremely popular with the new slider controls. Available with 'line' marking. Please specify. 8mm shaft (15x10x16)	1 - 9	10 up
008	Beautiful smooth finish with black edge mark for pointer. Great looks for your Hi Fi (19x14)	\$.25c	\$.22c
115	Intended for instruments, ham gear etc. Has fluted finger grip, skirt has sloping face with black line pointer (18x16)	.37c	.34c
144	The TALL look with lower part fluted for grip and smooth band with pointer mark at top. Gives Hi Fi's the expensive look. (24x20)	.42c	.38c
		.40c	.36c
			
150	Another tall one, but fluted right up with pointer in flute and just over onto the top. Very functional (19x20)	.40c	.36c
155	The shiny look with just four flutes, one black for pointer. Dished top (18x20)	.40c	.36c
195	If you must go for the big look, here it is with expensive deep flutting and radius pointer. Positive feel (28x15)	.62c	.56c
210	A popular knob, fluted with black ring and radius pointer (24x13)	.58c	.50c

			
215	Really sophisticated. Smooth metal and black fluted ring at top and just a red dot pointer - Wow! (29x13)	1 - 9	10 up
230	Another fluted knob but this time recessed and smooth at the bottom. Black pointer in one of the flutes. (20x17)	.66c	.60c
245	Adds the finishing touch to instruments etc. Part fluted with recessed black ring and radial pointer. Pointer is continued on sloping skirt for accurate settings (35x15)	.44c	.40c
255	Companion to 155. Just three flutes and a black pointer (24x15)	.69c	.62c
		.52c	.47c
			
280	Really unusual. Smooth with dished top, but this time the pointer is a machined slot - easy to check in the dark! (23x15)		
330	Another all smooth one with just a small radial edge black slot. Looks great on Hi Fi's (23x13)	.48c	.44c
441	The most impressive knob in the Jabel range. All black and beautiful. Why spoil your gear for the sake of good looking knobs? This one is in a class on its own, combines fine and wide flutes with shining metal pointer (21x17)	.40c	.36c
		.66c	.60c

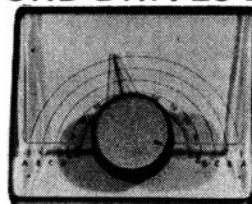
JAYCAR KNOBS Moulded in strong plastic with a brass bush to take the usual 1/8" shaft. Mainly intended for instruments etc and give that added quality look without costing a fortune. (Dimensions given in millimeters diameter x height)

			
TK64	A handsome little knob with skirt and dot for pointer. Knurled finger grip and white ring on top. (19x13)	TK160	with a fluted finger grip. Pointer on top with additional dot on the sloping skirt. Pointer is deeply inlaid so will not wear off. (24x15)
		TK175	Another one with deep fluting. This time the pointer runs down the side on to the skirt and across the top to handsome silver polished insert. (26x14)
		TK1	The biggest knob in the range. Knurled with a recessed metallic insert and very neat little black arros. (40x16)
			
TK127A	A well known favourite for years. Very positive grip, pointer type knob with skirt (32x14)	TK90A	Tiny and tall this one. Just right for panels where space is limited. Knurled with silver metal trim ring at top. (13x19)
		TK167	Instrument knob with wide, calibrated skirt engraved with figures 0 to 10. Skirt is in polished metal with black lettering (38x31)

john carr
CO PTY LTD

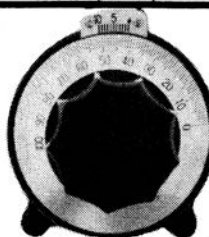
Australian Distributor: John Carr & Co.

DIAL CORD DRIVES ETC.



JABEL JB6/IN 4 1/2 x 3" Dial Calibrated 0-100 over 180° complete with 6 to 1 ratio dial, knob, cursor and mounting hardware. New version of JB6/1

	P&P	\$6.10
JB6/36N as above but with dual ratio drive 6 to 1 and 36 to 1	P&P	.50c
3/8" Diameter x 1/8" hole brass dial pulleys		\$7.66
2" round dial drum		.50c
RGV dial cord - per yard		.8c
approx. 26 yards		.60c
RGS Dial springs - universal		.4c
J1 5 to 1 planetary mechanism		\$0.87c
		0.08
		\$1.90



SATO 7660 Vernier Dial 70mm Diameter \$4.75
50mm Diameter 4.00
36mm Diameter 3.20
P&P 50c

EXTENSION SHAFTS



Extension shaft made of brass - extends 1/4" shaft up to 2" 70c
Flexible 1/4" shaft coupling \$1.60

BEZELS, INDICATORS



BL.1 Miniature indicator complete with 6.3 volt lamp - will operate off 12.6 volt with series resistor (1 watt). Ideal for all uses, red or green 3/8" mounting hole 44c



BL.2 Similar to BL.1 however with chrome surround - extremely attractive. 54c



L.6 6.3 Volt lamp for Bezels (lilliput) 15c

L.12 12 Volt lamp for Bezels (lilliput) 15c

BL.4 Neon indicator, red only, complete with built-in resistor, 240V AC 7/16" mounting hole 65c

MICROPHONES

Your mic is the first link in the electronic reproduction chain and it is often the weakest. So a better mic will often dramatically improve the system for very little cost. The main types are dynamic (moving coil), crystal (or ceramic), ribbon and condenser. The latter two are intended for professional applications.

FREQUENCY RESPONSE For intercoms and communications 300-4000 Hz is adequate and compares with telephone quality. For music reproduction 50-15,000 Hz is essential.

OMNI OR UNI-DIRECTIONAL Omni-directional picks up sound from every direction and uni-directional from in front only (useful for eliminating background noise). These are often known as cardioid microphones since their pick up pattern is heart shaped (imagine the microphone pointing into the V of the heart then the maximum level is in that direction).

OUTPUT LEVEL Measures the sensitivity or efficiency - the lower the number of db quoted the higher the output. Thus -55db has a higher output than -60db. Most amplifiers will handle -70db.

IMPEDANCE High or low, it must match the equipment. But high impedance mics can only operate with up to 20' of cable whereas low can go up to 100'. If you need high impedance plus distance you need a matching transformer with a low impedance mic.

HOW TO CHOOSE Check all the above points against the money available. Two seemingly identical mics may have different prices because one has a flatter response or better distortion. Do not be taken in by the looks, it is the inside that matters.

HOW TO USE Practice makes perfect so always try moving the mic round before you actually use it. Get as close to the sound as possible to reduce noise but not so close that the sound gets "breathy". Do not shout - that's the amplifiers job. Do not fidget with the mic or lead or papers or anything nearby.

ECONOMY MICROPHONES (All P&P 50c)

CM62 CRYSTAL LAPEL Is a sensitive general purpose mic., designed to be attached to collar or lapel leaving hands free. Frequency response is from 200-8000Hz with a sensitivity of -55db. Finished in chrome and supplied complete with 3' of shielded microphone cable. High impedance, omni-directional. 1.5/8" diameter \$1.50

CM70 Is a crystal mic. with built-in on-off switch and is supplied with a desk stand. Slim pencil-like with omni-directional coverage, it is very good value for money. Solid metal construction and finished in satin chrome with black trim. Frequency response from 100-10000Hz, Sensitivity -65db Impedance 500/1Mohm. Measures 26mm diameter x 135mm long \$5.90

DM401 Is a dynamic version of the above microphone with a similar specification except the impedance - 50kohm - and the sensitivity -57db. A lot of bands are using this inexpensive omnidirectional mic. \$9.45

DM392 This is a super efficient, attractive looking dynamic microphone, yet it's extremely rugged. Being non-directional and lightweight we find it is very popular with tape recorder enthusiasts. Frequency response from 80-9500Hz, 50kohm impedance, omni-directional with a sensitivity of -57db \$4.74



D1095 DYNAMIC PENCIL TYPE This remote-control microphone is intended for table top or hand use. The impedance is 200-600ohms which is ideal for low impedance cassette recorders. The on-off switch is fitted with a separate wire and plug for connection to recorders with remote switching sockets. Frequency response is from 100-9000Hz. Dimensions 4 1/2" long x 7/8" diameter and it is fitted with miniature P2 and subminiature P1 (suits most Japanese recorders) \$3.90

MICROPHONE ACCESSORIES

Microphone Stand Model MS6, non reflecting, heavy duty tri-stand extending to 6 feet. Chrome plated extension. \$12.00 freight on

MS4 Table Microphone Stand with chrome plated extension and grey base with rubber feet. \$3.50

Chrome plated microphone goosenecks

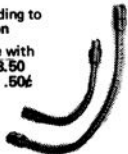
18"

P&P

P&P

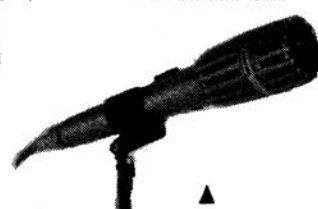
\$4.00

.50c



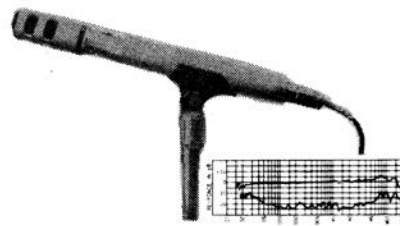
PROFESSIONAL QUALITY MICROPHONES (All P&P 50c)

UDM160 CARDIOD DYNAMIC MICROPHONE This is an excellent general purpose, professional quality microphone for general, PA, amateur radio and tape recorder use. Has a built-in on/off switch and a special 'Pop' and wind blast screen. The diaphragm is completely dust shielded. This is an extremely attractive looking mic. being finished in red leather with satin chrome trim. Impedance 50kohm, Sensitivity -57db/1000Hz, Frequency response 100-10000Hz. Dimensions 48mm diameter by 167mm long \$16.50



UDM102 DUAL IMPEDANCE CARDIOD DYNAMIC MICROPHONE A superb dynamic microphone for applications where feedback from speakers is a problem. Features a highly directional cardioid pattern. Dual impedance 600 or 50kohm by simply flipping a switch. Ideal for situations where the microphone has to be used in a lot of different and unpredictable locations. Also features an on-off switch. Extremely good quality with a polished chrome, diecast construction. Supplied complete with mic. holder and shielded cable. Impedance 50kohm high/600ohm low. Sensitivity -57db/1000Hz, Frequency response 100-12000Hz, Dimensions 42mm diameter x 215mm long. Weighs over 1 lb so it is a solid quality job \$21.00

THE ULTIMATE IN PROFESSIONALISM AT A REASONABLE PRICE - ECM 1005 DUAL IMPEDANCE ELECTRET CONDENSER MICROPHONE



How can you describe a response from a low, low 20Hz to 18kHz? Fantastic, magnificent - you've just got to hear this one to appreciate the unsurpassed tonal quality from the whole audio spectrum, quality that only condenser microphone can give. This one uses the latest electret principle, powered by a single AA size battery located inside and which runs the mic. for up to 10000 hours. Extremely slim size (only 0.88" diameter) so it doesn't hide the performer too much. Two models available - omni-directional (ideal for better bands) and cardioid (for feedback situations or individual performers) Just look through the spec and see what you get for the price - real value eh?

Model ECM1005 Dual impedance omni-directional \$22.50
Model ECM1015 Dual impedance cardioid \$28.00

SPECIFICATIONS

TYPE : ELECTRET CONDENSER MICROPHONE
IMPEDANCE : 600 OHMS
FREQUENCY RESPONSE : 20-18,000Hz
OUTPUT LEVEL : -68dB $\pm$ 3dB AT 1,000Hz
SIGNAL TO NOISE RATIO : 50dB AT 1,000Hz
SOUND PRESSURE LEVEL : MAXIMUM 132dB
POLAR PATTERN : UNI DIRECTIONAL CARDIOD
CABLE : 20-FT 1-CONDUCTOR SHIELDED
OPERATION VOLTAGE : 1.5V 'AA' SIZE BATTERY
ACCESSORY : MIKE HOLDER AND WIND SCREEN
DIMENSIONS : 0.88" (DIA) x 7.78" (LONG)
NET WEIGHT : 150 GRAM

MODEL ECM-1015
IMPEDANCE : 50K OHMS AND 600 OHMS
OUTPUT LEVEL : 50K OHMS -52dB AT 1,000Hz
600 OHMS -68dB AT 1,000Hz

TYPE : ELECTRET CONDENSER MICROPHONE
IMPEDANCE : 600 OHMS
FREQUENCY RESPONSE : 20-18,000Hz
OUTPUT LEVEL : -62dB $\pm$ 3dB AT 1,000Hz
SIGNAL TO NOISE RATIO : 50dB AT 1,000Hz
SOUND PRESSURE LEVEL : MAXIMUM 130dB
POLAR PATTERN : OMNI DIRECTIONAL
CABLE : 20-FT 1-CONDUCTOR SHIELDED
OPERATION VOLTAGE : 1.5V 'AA' SIZE BATTERY
ACCESSORY : MIKE HOLDER AND WIND SCREEN
DIMENSIONS : 0.88" (DIA) x 7.8" (LONG)
NET WEIGHT : 150 GRAM

MODEL ECM-1005
IMPEDANCE : 50K OHMS AND 600 OHMS
OUTPUT LEVEL : 50K OHMS -48dB AT 1,000Hz
600 OHMS -62dB AT 1,000Hz

ELECTRONICS AUSTRALIA LIBRARY SERIES

All \$2.00 each P&P 50c

BASIC ELECTRONICS (Third Edition). An easy to read introduction to radio, hi-fi and electronics, this book will give a basic insight into electronics covering radio, television and sound reproduction. 23 Chapters in all, 100's of illustrations and drawings - the ideal beginner's book.

FUNDAMENTALS OF SOLID STATE. An introduction to semi conductors and their applications. This excellent publication explains clearly the full theory of operation of solid state devices including transistors, diodes, thyristors, I.C.'s, field effect devices etc. 17 Chapters, many illustrations and drawings.

DIGITAL ELECTRONICS (2nd Edition). Complete digital theory and practice for the technician, student, engineer or intelligent beginner. Explains all basic fundamentals for logic circuits (chapter 1) through to digital computers (chapter 11). Also features a full descriptive article on how to build a digital teaching device. Over 100 pages of easy to understand text, photos and drawings.

HI FI STEREO ANNUAL (New Edition) A very popular introduction to the subject because it explains all the technical jargon in very simple terms - what all the figures mean, what to look for in equipment. Twelve chapters cover the History of recording, speakers, room acoustics, suppliers, 4-channel etc. Lavishly illustrated in colour with many explanatory diagrams. Anyone about to spend a fortune on Hi Fi should read it (and possibly save his fortune!).

PHILIPS POCKET BOOK

500 Pages of interesting technical information on the complete Philips range of electronic components - all specifications, operating parameters etc. given. A most essential reference book for engineers, technicians, amateurs, advanced hobbyists etc.

\$2.30 P&P 50c

PUBLICATIONS



ELECTRONIC EXPERIMENTER'S MANUAL by General Electric.

Over 40 interesting projects for hobbyists, engineers, technicians and students. The first chapter (46 pages) covers the fundamentals of operation of semi-conductors including SCR's, thyristors, triacs, diacs, I.C.'s, thermistors, etc., also magnetic reed switches, valves. The following chapters cover a most interesting series of electronic projects which can be easily built. The series includes audio amps, C.D. ignition systems, battery chargers, sequential turn signals, automatic flashing lights, electronic dice, magic lamp, speed control for electric drills etc. etc. - an ideal reference book for the hobbyist. - 250 pages in all

\$3.40

P&P 50c

TRANSISTOR MANUAL by General Electric.

The 7th edition of this popular manual - over 650 pages of information ranging from basic semiconductor theory to transistor specifications. Chapters are as follows:- Basic Semiconductor Theory, Small Signal Characteristics, Large Signal Characteristics and Transistor Choppers, Biasing and DC Amplifiers, Logic, Switching Characteristics, Digital Circuits, Oscillators, Feedback and Servo Amplifiers, Regulated DC Supplies, Audio and High Fidelity Amplifier Circuits, Radio Receiver Circuits, Unijunction Circuits, Tunnel Diode Circuits, Experimenter Circuits, Silicon Controlled Switches, Silicon Signal Diodes and Snap Diodes, Transistor Measurements, The Transistor Specification Sheet and Specifications and Application Literature.

Limited Quantity

\$3.50

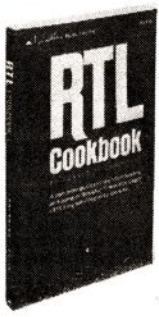
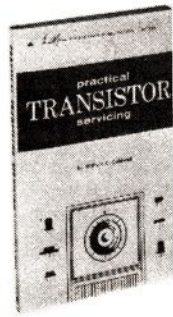
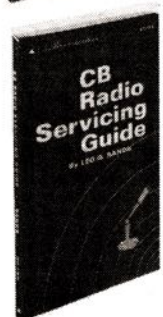
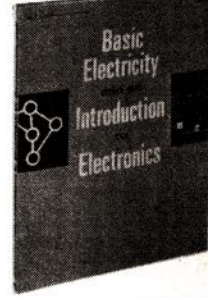
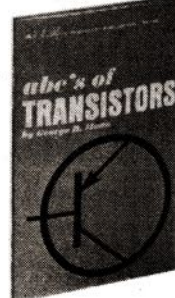
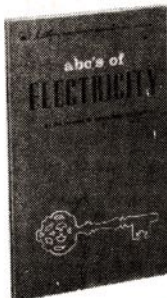
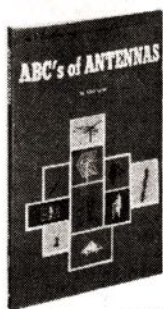
P&P 50c

G.E. SEMICONDUCTOR DATA BOOK

An unbelievable 1500 pages of data, pictures suggested circuits etc. on all of the following G.E. devices signal transistors power transistors, diodes, unijunction devices OPTO electric devices rectifiers, SCR's, triacs etc. A must for every engineer and hobbyist.

\$5.50

P&P \$1.00



SAMS BOOKS (P&P 50c) Howard Sams is one of the US's greatest publishers of books for the enthusiast. The books we have chosen, while naturally written with the US in mind are still very relevant here. Beautifully presented in soft covers with the emphasis on simple, easy to follow understanding.

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CB Radio Servicing Guide (160p) is the complete Citizen's Band book covering service, tune up, testing and analysis of circuits.
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How To Use IC Logic (136p) is intended for engineers, technicians and servicemen who want a simplified understanding of ICs.
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Practical Transistor Servicing (192p) enables trouble to be pinpointed fast. A special examples chapter covers car radios as well.
\$5.00

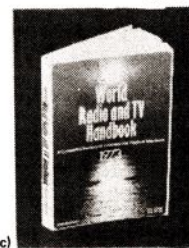
RTL Cookbook (240p) deals with every aspect of Resistor-Transistor-Logic. How to use and design circuits using these very low cost ICs for professionals and amateurs.
\$6.00

The World Radio-TV Handbook is the complete directory of radio and tv. 400 pages give complete and exact information on every transmitting station in the world. Constant reference book for Shortwave listeners, DXers as well as professional users. Recommended by Radio Australia
\$5.75 (Latest Edition) (P&P 75c)

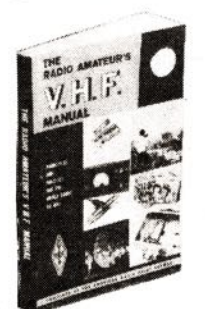
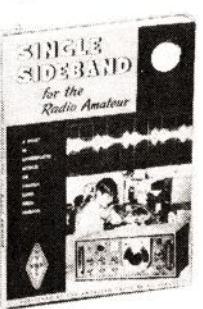
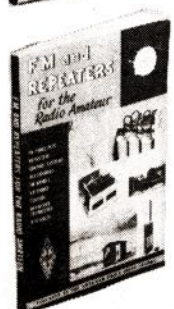
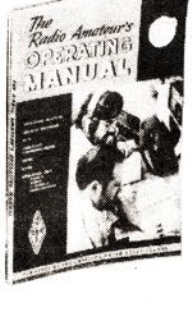
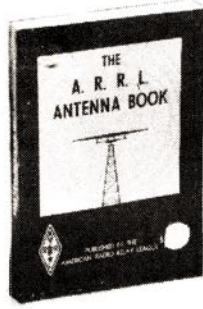
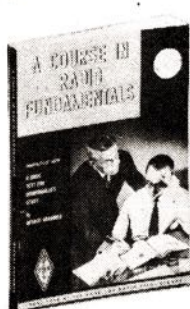
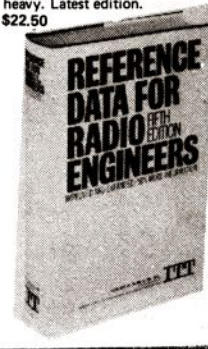
Security Electronics (160p) reviews the latest techniques being used so that you can apply. Special chapter covers location of hidden objects.
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National

I.C.	DESCRIPTION	DIAGRAM NUMBER
SN7400N	Quad 2-input NAND	1
SN7401N	Quad 2-input NAND O/C collector	2
SN7402N	Quad 2-input NOR	3
SN7403N	Quad 2-input NAND O/C collector	4
SN7404N	Hex inverter	5
SN7405N	Hex inverter O/C collector	6
SN7408N	Quad 2-input AND	7
SN7409N	Quad 2-input AND O/C collector	8
SN7410N	Triple 3 input NAND	9
SN7413N	Dual 4-input NAND Schmitt	10
SN7420N	Dual 4-input NAND	11
SN7430N	8-input NAND	12
SN7437N	Quad 2-input NAND gate/buffer	13
SN7440N	Dual 4-input NAND power	15
SN7441AN	BCD to decimal decoder/driver	14
SN7442N	BCD-decimal decoder	16
SN7447N	BCD-7 segment decoder/driver	17
SN7450N	Expandable dual 2 wide 2-input	18
SN7451N	Dual 2 wide 2-input	19
SN7453N	Expandable 4 wide 2-input	20
SN7454N	4 wide 2-input	21
SN7460N	Dual 4-input expander	22
SN7470N	JK flip flop	23
SN7472N	JK master slave flip flop	24
SN7473N	Dual JK master slave flip flop	25
SN7474N	Dual d-type edge triggered flip flop	26
SN7475N	Quad bi-stable latch	32
SN7476N	Dual JK master slave flip flop	31
SN7480N	Gated full adder	27
SN7482N	2-bit binary full adder	28
SN 7483N	4-bit binary full adder	29
SN7486N	Half adder	30
SN7490N	Decade counter	33

SN7491AN	8-bit shift register	34
SN7492N	Divide by 12 counter	35
SN7493N	4-bit binary counter	36
SN7495N	4-bit left shift, right shift register	37
SN7496N	5-bit shift register	38
SN74107N	Dual JK master slave flip flop	39
SN74121N	Monostable flip flop	40
SN74141N	BCD-decimal decoder, nixie driver	43
SN74192N	Up down decade counter with clear	41
SN74193N	Up down binary counter with clear	42

GENERAL INFORMATION

Supply voltage Max.	: 7V
Operating voltage	: 4.75-5.25
Operating temp. range	: -20 to +75°C
Storage temp. range	: -65 to +150°C
Thermal resistance	: 150°C per watt max.

OPERATING REQUIREMENTS

Logic 1 is positive and high, limits 2.4V to 5.5V
Logic 0 is nominally zero, limits 0V to 0.4V

A unit load applied to an input is 1.6mA and this is the maximum current required to reduce the voltage on an input terminal to zero. Certain devices require a multiple of unit loads for this operation.

Fan-out is the number of unit loads that an output can accommodate and is commonly 10, that is an output may be connected to 10 standard inputs and be capable of passing the 16mA necessary to drop each input voltage to under 0.4V

Numerous accelerated moisture tests have been devised to evaluate the reliability of plastic integrated circuits in high humidity environments. One of the more widely accepted tests is the so-called "pressure pot." This test consists of cooking an IC in a common, home pressure cooker for periods up to 48 hours. The temperature and pressure developed inside the pressure cooker virtually guarantees that water will be forced into a leaky package within a few hours.

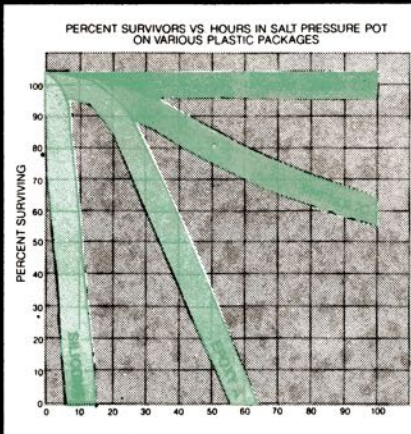
The prevailing common theory holds that ICs which fail after a "pressure pot" are not reliable for high humidity applications. To some extent, the theory is correct. However, there is a basic fallacy which is not generally recognized, viz., the water vapor inside a pressure cooker is usually very clean (that is to say, it contains little or no ionic impurities), and clean water does not damage ICs. Obviously then, a clean IC package will look very good during a "pressure pot"—even if the package leaks profusely. This fact explains the paradox of why

some IC packages fare well on "pressure pot" but show a high failure rate in less severe, "dirty water" environments such as salt atmosphere, or the "dishwater" test.

With a slight modification in procedure, the "pressure pot" test can be used as a quick and reliable evaluation test for all leaky packages—be they glass and metal; glass and ceramic;

"dirty" plastic or "clean" plastic. Referred to as the "salt pressure pot," this test consists of immersing the IC in a glass beaker filled with a 5% salt water solution, then "pressure potting" the beaker and its contents. With this method, any water which penetrates the IC package to the IC chip carries a high level of sodium and chlorine ions—a combination guaranteed to destroy the IC chip within a matter of seconds.

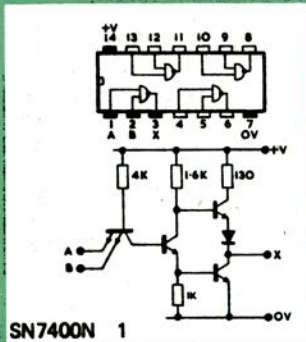
The "salt pressure pot" is used routinely as a reliability monitor on National's Epoxy B package. It has also been tried on most competitive molded packages. The test results are dramatic, as illustrated.



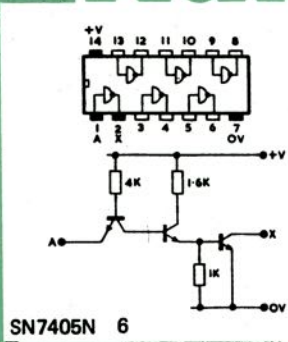
Epoxy B

National

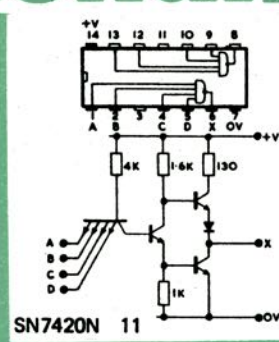
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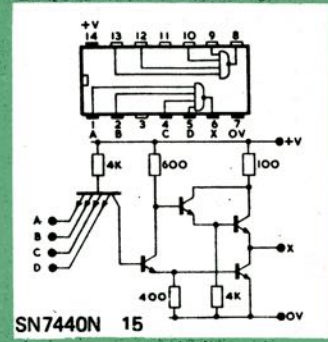
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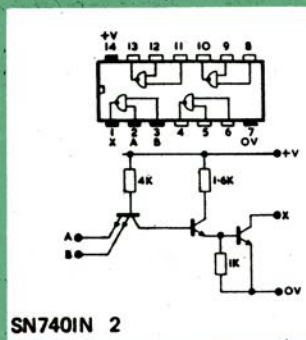
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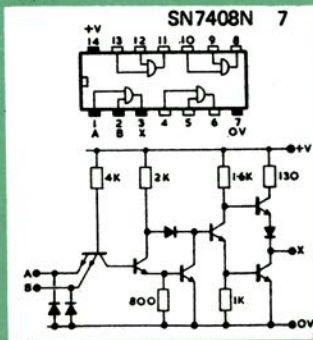
SN7420N 11



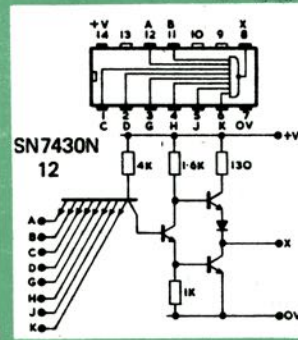
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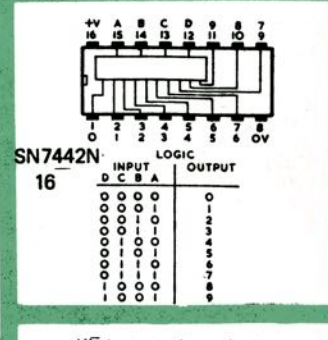
SN7401N 2



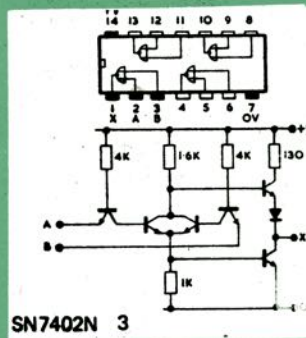
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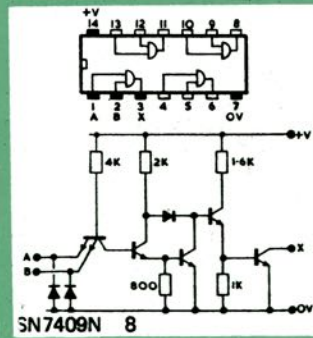
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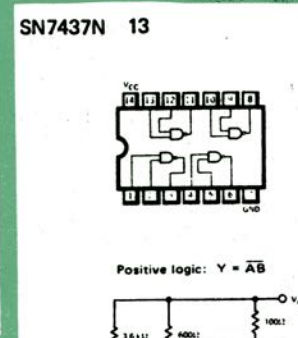
SN7442N 16



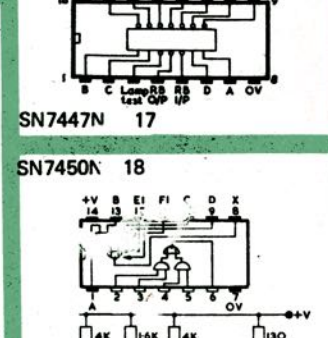
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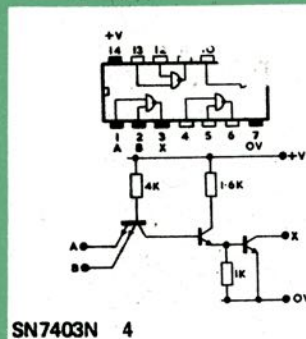
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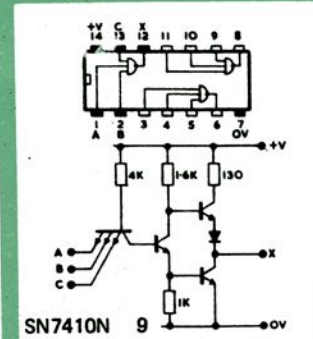
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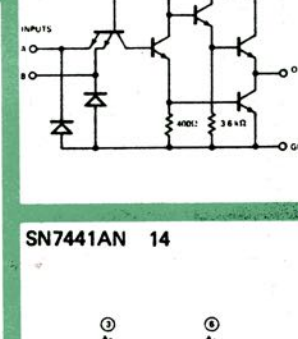
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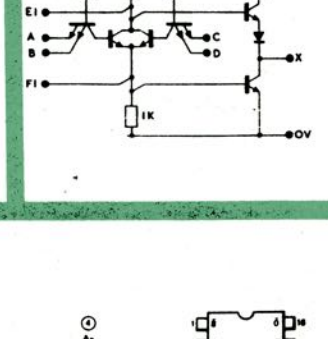
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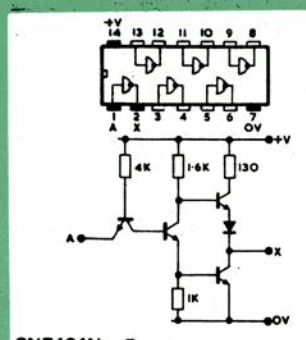
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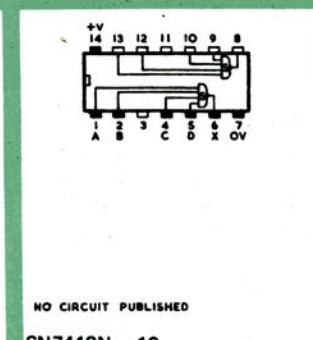
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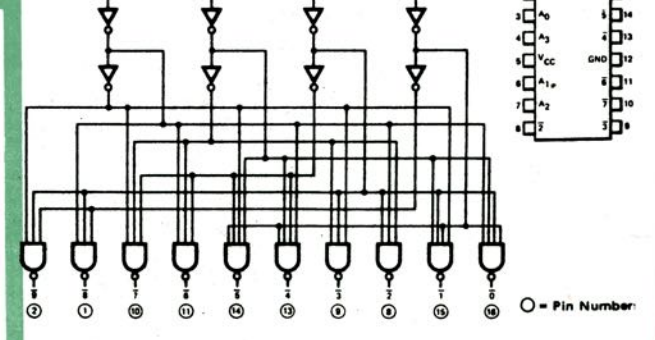
SN7447N 17



SN7404N 5



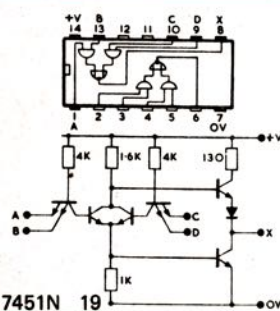
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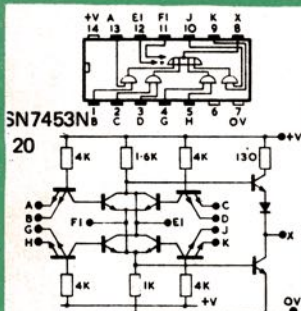
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○ = Pin Number

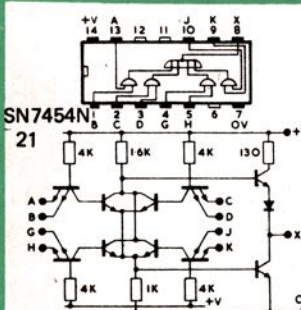
National



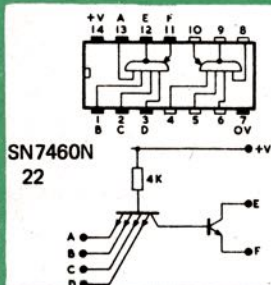
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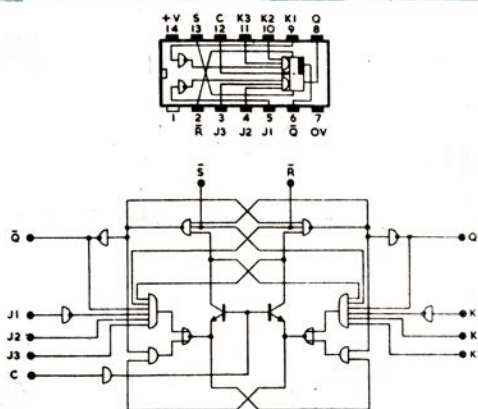
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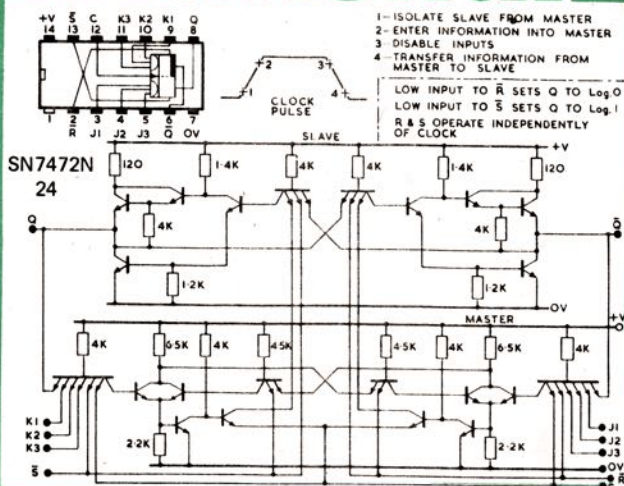
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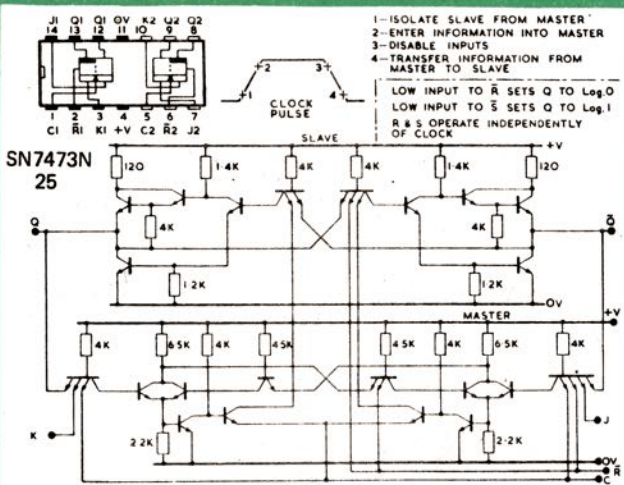
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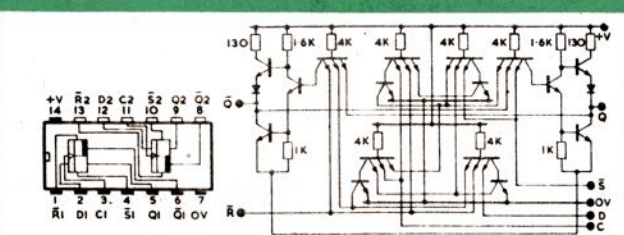
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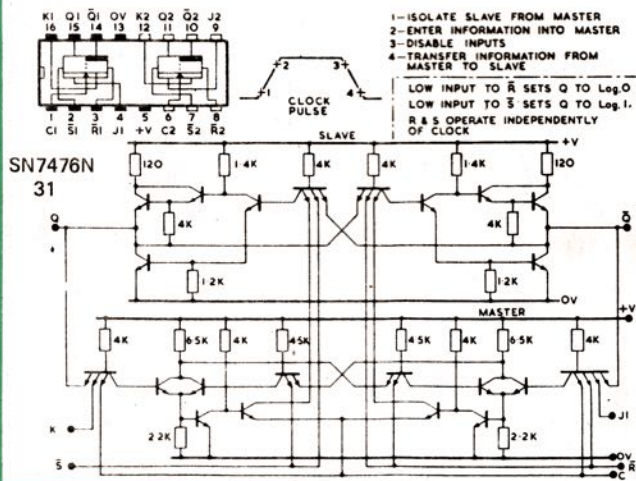
SN7472N 24



SN7473N 25

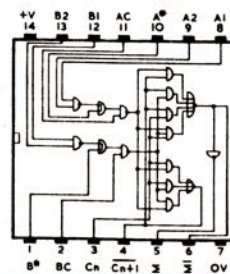


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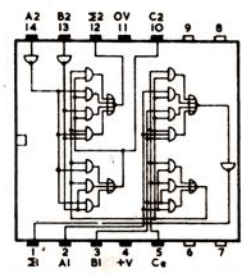


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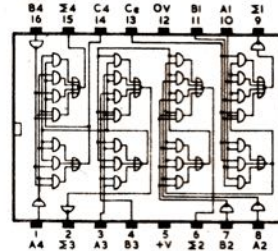
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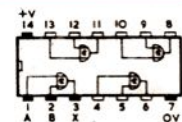
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SN7483N 29



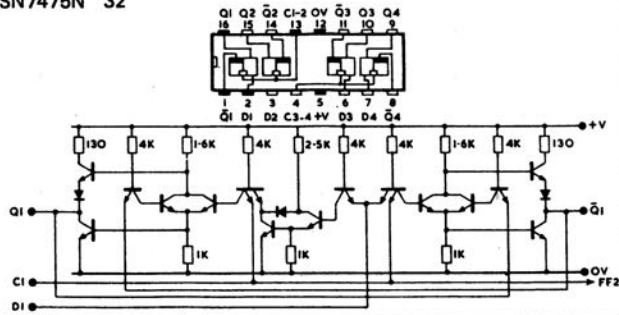
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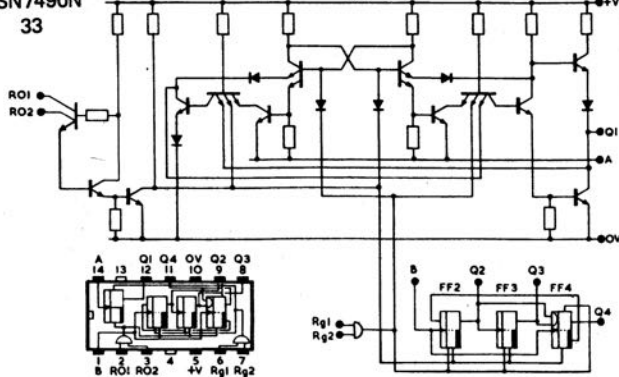
NO CIRCUIT PUBLISHED

National

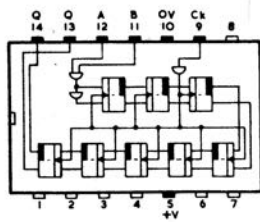
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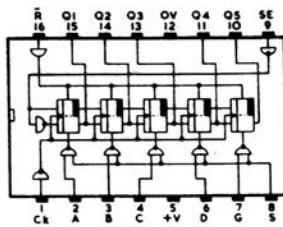
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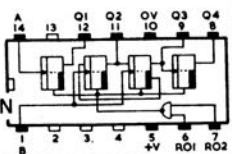
SN7491AN 34



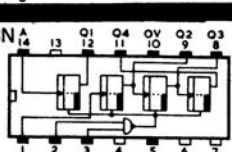
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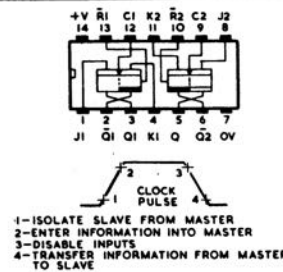
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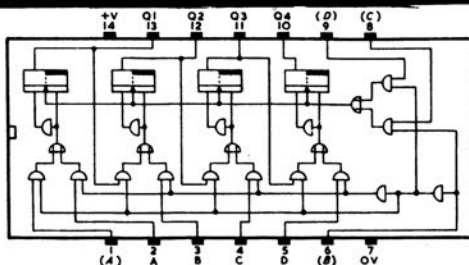
SN7493N 36



SN74107N 39

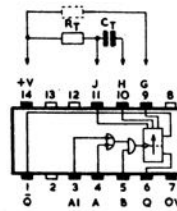


LEGEND
(A) SERIAL INPUT
(B) MODE CONTROL
(C) CLOCK 2
(D) CLOCK 1
(E) RIGHT SHIFT



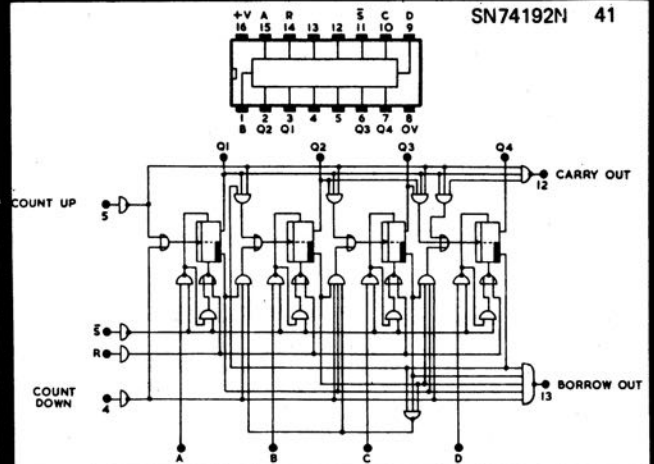
SN7495N 37

SN74121N 40

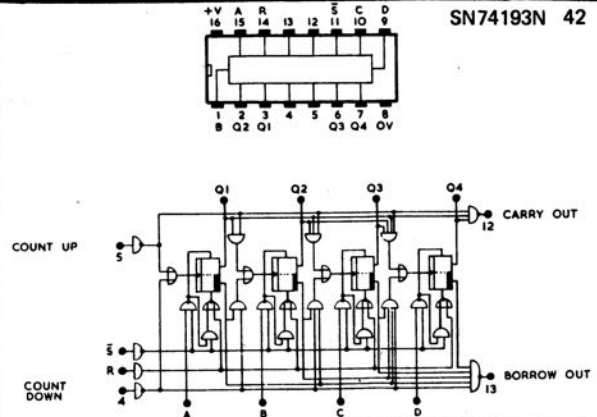


Pulse duration: $t = 0.7CR$ approx.
Limits: $R_t(\min) = 1.4K$
 $R_t(\max) = 40K$
 $C_t(\max) = 1000\mu F$

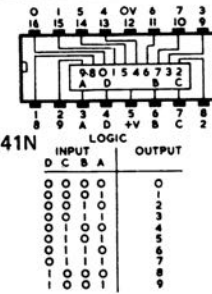
SN74192N 41



SN74193N 42



SN74141N 43



Digital IC information kindly supplied by Electrovalue UK. Try them when you're over there!



Epoxy B

LM309 FIVE-VOLT REGULATORS

Signetics

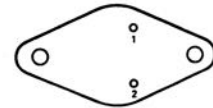
FEATURES

- OUTPUT CURRENTS IN EXCESS OF 1 amp
- INTERNAL THERMAL OVERLOAD PROTECTION
- INTERNAL CURRENT LIMITING
- NO EXTERNAL COMPONENTS REQUIRED

DESCRIPTION

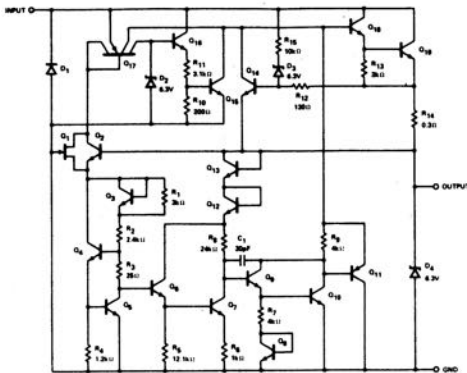
The LM109 and LM309 are complete 5 volt regulators fabricated on a single silicon chip. These regulators are designed for local "on card" regulation to eliminate many of the noise and ground loop problems associated with single-point regulation. They employ internal current limiting, thermal shutdown, and safe-area compensation which makes the circuitry essentially blow-out proof. If adequate heat sinking is provided, the devices can deliver output currents in excess of 200mA from the TO-5 package, and 1A from the TO-3 package. In addition to their use as fixed 5 volt regulators, these devices may be used with external components to obtain adjustable output levels. They may also be used as the power pass element in precision regulators.

K PACKAGE (Bottom View)

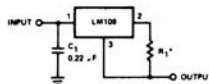


1. Input
2. Output

Case is connected to ground.

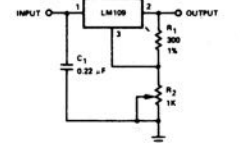


CURRENT REGULATOR

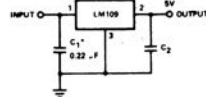


NOTES: *Determines output current.

ADJUSTABLE OUTPUT REGULATOR

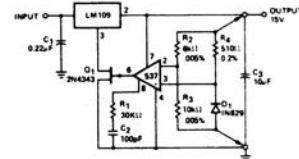


FIXED 5V REGULATOR



NOTES: *Required if regulator is located an appreciable distance from power supply filter.
†Although no output capacitor is needed for stability, it does improve transient response.

PRECISION VOLTAGE REGULATOR



NOTES: *Regulation better than 0.01% load, line and temperature, can be obtained.
†Determines zener current. May be adjusted to minimize thermal drift.
‡Solid tantalum.

FOR PRICES SEE PAGE 62

Signetics

555 TIMER

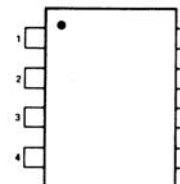
FEATURES

- TIMING FROM MICROSECONDS THROUGH HOURS
- OPERATES IN BOTH ASTABLE AND MONOSTABLE MODES
- ADJUSTABLE DUTY CYCLE
- HIGH CURRENT OUTPUT CAN SOURCE OR SINK 200mA
- OUTPUT CAN DRIVE TTL
- TEMPERATURE STABILITY OF 0.005% PER °C
- NORMALLY ON AND NORMALLY OFF OUTPUT

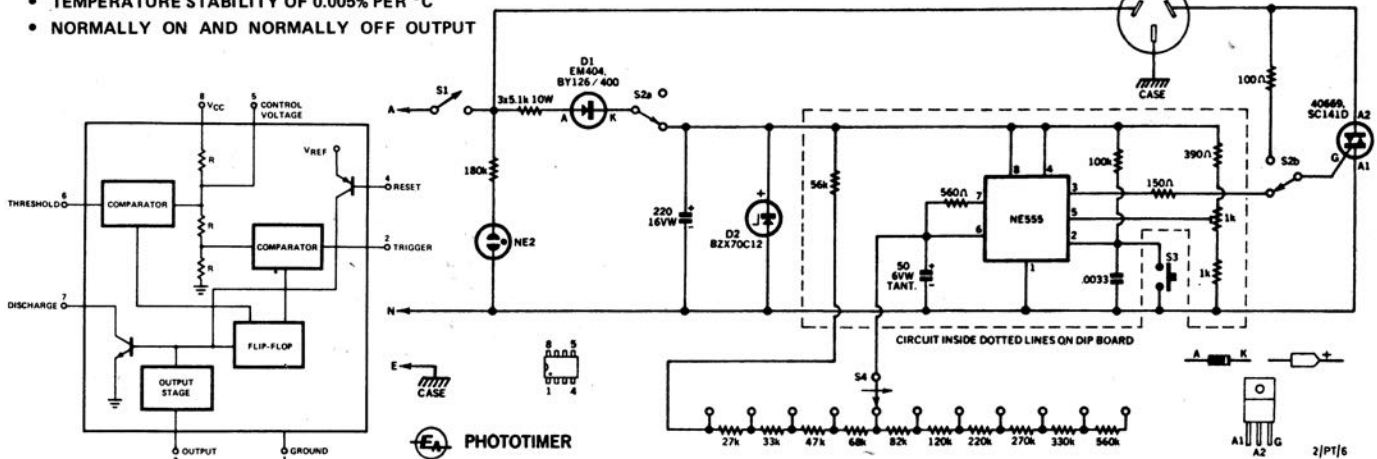
DESCRIPTION

The NE/SE 555 monolithic timing circuit is a highly stable controller capable of producing accurate time delays, or oscillation. Additional terminals are provided for triggering or resetting if desired. In the time delay mode of operation, the time is precisely controlled by one external resistor and capacitor. For a stable operation as an oscillator, the free running frequency and the duty cycle are both accurately controlled with two external resistors and one capacitor. The circuit may be triggered and reset on falling waveforms, and the output structure can source or sink up to 200mA or drive TTL circuits.

V PACKAGE (Top View)



1. Ground
2. Trigger
3. Output
4. Reset
5. Control Voltage
6. Threshold
7. Discharge
8. VCC



ELECTRONICS Australia, May, 1973

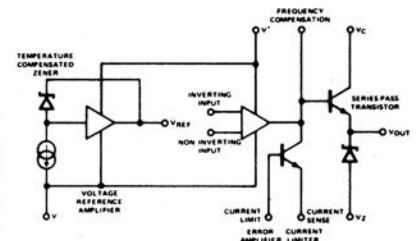
μA723 **PRECISION VOLTAGE REGULATOR**

FEATURES

- POSITIVE OR NEGATIVE SUPPLY OPERATION
- SERIES, SHUNT, SWITCHING OR FLOATING OPERATION
- .01% LINE AND LOAD REGULATION
- OUTPUT VOLTAGE ADJUSTABLE FROM 2 TO 37 VOLTS with access to remote shutdown.
- OUTPUT CURRENT TO 150mA WITHOUT EXTERNAL PASS TRANSISTOR

DESCRIPTION

The μA723 is a Monolithic Precision Voltage Regulator capable of operation in positive or negative supplies as a series, shunt, switching or floating regulator. The μA723 contains a temperature compensated reference amplifier, error amplifier, series pass transistor, and current limiter.



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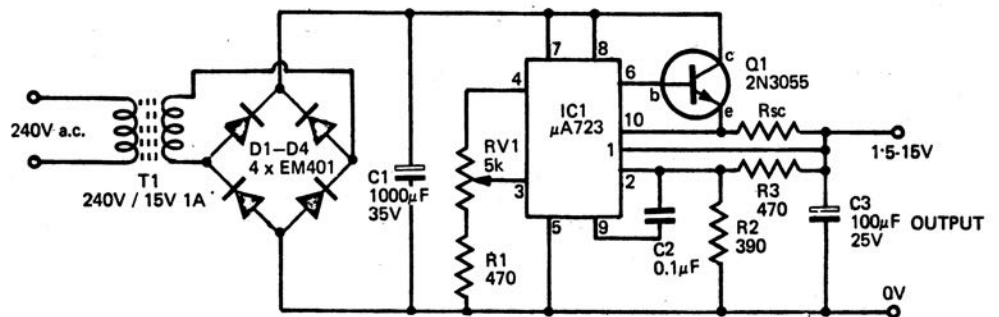
Simple, adjustable power source has innumerable applications.



1. Current Sense
2. Inverting Input
3. Noninverting Input
4. V_{REF}
5. V⁻
6. V_{OUT}
7. V_C
8. V⁺
9. Frequency Compensation
10. Current Limit

ABSOLUTE MAXIMUM RATINGS

μA723	
Pulse Voltage from V ⁺ to V ⁻ (50ms)	50V
Continuous Voltage from V ⁺ to V ⁻	40V
Input-Output Voltage Differential	40V
Maximum Output Current	150mA
Current from V _{REF}	15mA
Current from V _Z	
Internal Power Dissipation (Note 1)	800mW
Operating Temperature Range	-55 to +125°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature	300°C



FOR PRICES SEE PAGE 62

Electronics Today - November 1972.

μA741 **HIGH PERFORMANCE OPERATIONAL AMPLIFIER**

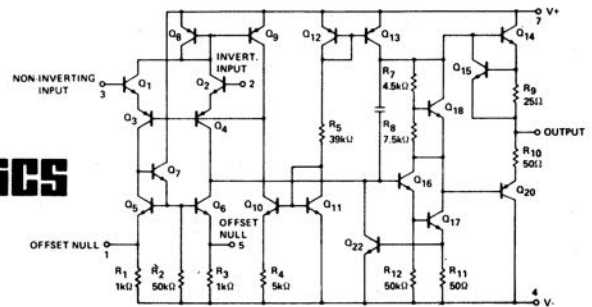
FEATURES

- INTERNAL FREQUENCY COMPENSATION
- SHORT CIRCUIT PROTECTION
- OFFSET VOLTAGE NULL CAPABILITY
- EXCELLENT TEMPERATURE STABILITY
- HIGH INPUT VOLTAGE RANGE
- NO LATCH-UP

DESCRIPTION

The μA741 is a high performance operational amplifier with high open loop gain, internal compensation, high common mode range and exceptional temperature stability. The μA741 is short-circuit protected and allows for nulling of offset voltage.

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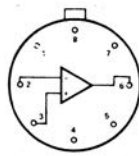


T PACKAGE

This simple light operated switch has many applications.

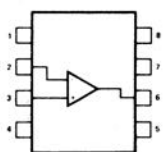
ABSOLUTE MAXIMUM RATINGS

μA741C	
Supply Voltage	±18V
Internal Power Dissipation (Note 1)	500mW
Differential Input Voltage	±30V
Input Voltage (Note 2)	±15V
Voltage between Offset Null and V ⁻	±0.5V
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Solder, 60 sec)	300°C
Output Short Circuit Duration (Note 3)	Indefinite



ORDER PART NOS. μA741T/μA741CT

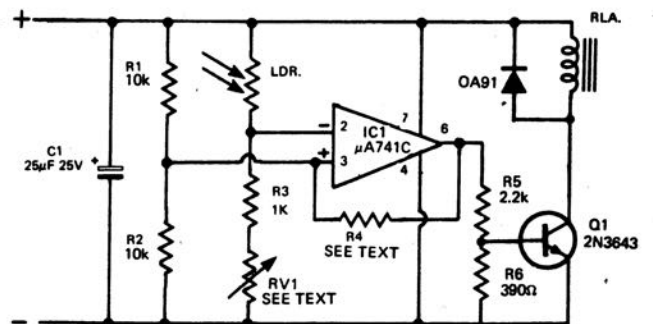
V PACKAGE



ORDER PART NO. μA741CV

1. Offset Null
2. Inverting Input
3. Non-Inverting Input
4. V⁻
5. Offset Null
6. Output
7. V⁺
8. NC

1. Offset Null
2. Inv. Input
3. Non-Inv. Input
4. V⁻
5. Offset Null
6. Output
7. V⁺
8. NC



ELECTRONICS TODAY — NOVEMBER 1971

561 PHASE LOCKED LOOP

FEATURES

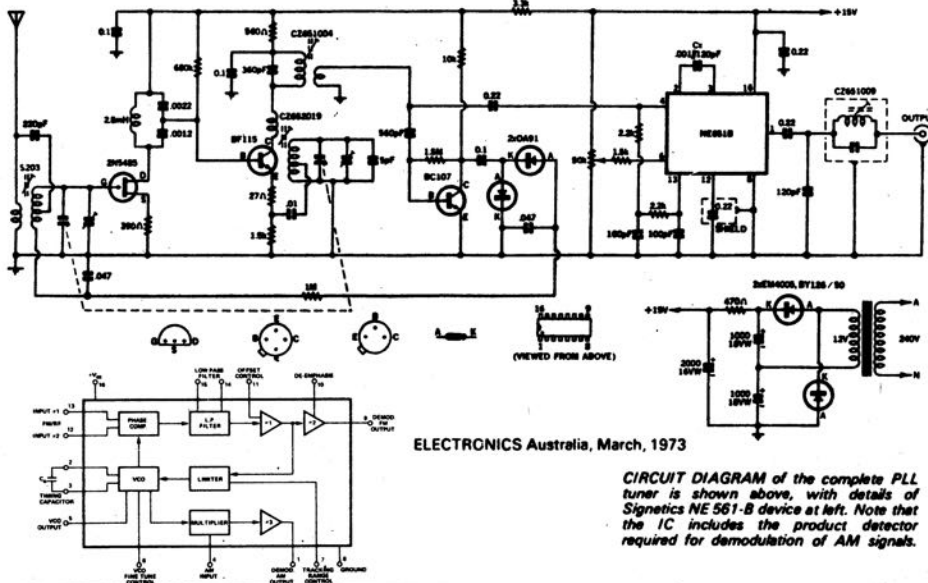
- FM DEMODULATION WITHOUT TUNED CIRCUITS
- SYNCHRONOUS AM DETECTION
- NARROW BAND PASS TO $\pm 1\%$
- EXACT FREQUENCY DUPLICATION IN HIGH NOISE ENVIRONMENT
- ADJUSTABLE TRACKING RANGE
- WIDE TRACKING RANGE $\pm 15\%$
- HIGH LINEARITY - 1% DISTORTION MAX
- FREQUENCY MULTIPLICATION AND DIVISION THROUGH HARMONIC LOCKING

DESCRIPTION

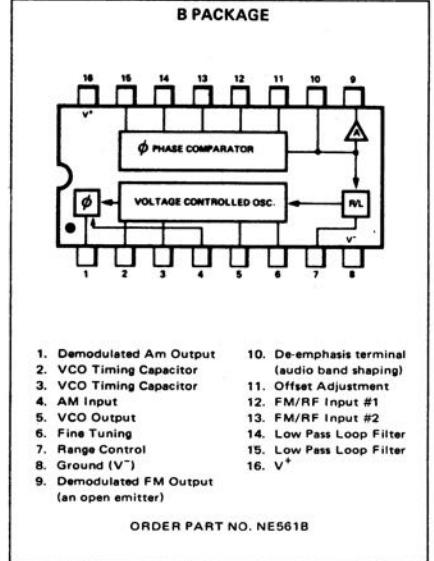
The NE561B Phase Locked Loop (PLL) is a monolithic signal conditioner, and demodulator system comprising a VCO, Phase Comparator, Amplifier and Low Pass Filter, interconnected as shown in the accompanying block diagram. The center frequency of the PLL is determined by the free running frequency (f_0) of the VCO. This VCO frequency is set by an external capacitor and can be fine tuned by an optional Potentiometer. The low pass filter, which determines the capture characteristics of the loop is formed by the two capacitors and two resistors at the Phase Comparator output.

The PLL system has a set of self biased inputs which can be utilized in either a differential or single ended mode. The VCO output is available for signal conditioning, frequency synchronization, multiplication and division applications. Terminals are provided for optional external control of the tracking range, VCO frequency, and output DC level. An analog multiplier block is incorporated into the PLL system to provide frequency selective synchronous AM detection capability.

The monolithic signal conditioner-demodulator system is useful over a wide range of frequencies from less than 1 Hz to more than 15 MHz with an adjustable tracking range of $\pm 1\%$ to $\pm 15\%$.



ELECTRONICS Australia, March, 1973



ABSOLUTE MAXIMUM RATINGS

Maximum Operating Voltage	26V
Input Voltage	1V RMS
Storage Temperature	-65°C to 150°C
Operating Temperature	0°C to 70°C
Power Dissipation	300mW

Limiting values above which serviceability may be impaired

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μA709 OPERATIONAL AMPLIFIER

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FEATURES

- OPEN LOOP VOLTAGE GAIN = 45,000
- OUTPUT VOLTAGE SWING = $\pm 14V$
- INPUT COMMON MODE RANGE = $\pm 10V$
- DIFFERENTIAL INPUT RESISTANCE = $\mu A709$ 250k Ω
 $\mu A709C$ 400k Ω

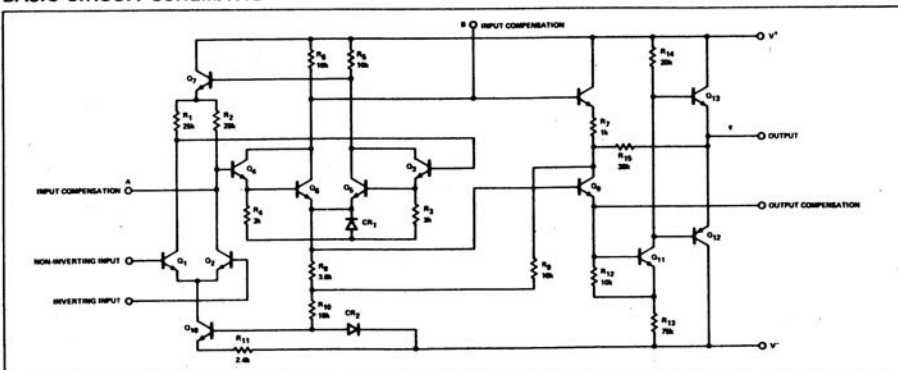
ABSOLUTE MAXIMUM RATINGS

Supply Voltage	$\pm 18V$
Internal Power Dissipation (Note 1)	N5709 250 mW S5709 300 mW
Differential Input Voltage	$\pm 5.0V$
Input Voltage	$\pm 10V$
Open Short-Circuit Duration ($T_A = 25^\circ C$)	$\pm 25^\circ C$
Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	$\mu A709C$ 0°C to +75°C $\mu A709$ -55°C to +125°C
Lead Temperature (Soldering, 60 sec)	300°C

NOTE:

1. Rating applied for case temperatures to +125°C; derate linearly at 5.6mW/°C for ambient temperatures above +95°C.

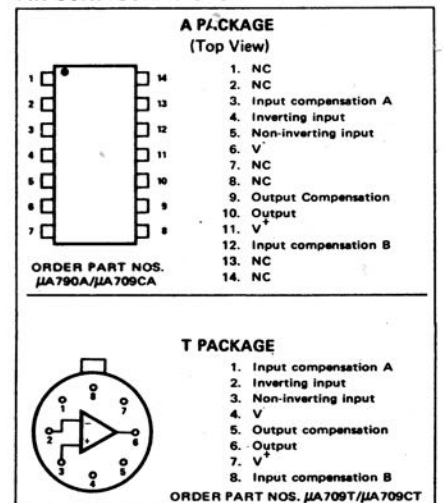
BASIC CIRCUIT SCHEMATIC



DESCRIPTION

The $\mu A709$ is a high performance monolithic operational amplifier with differential inputs. High open loop gain, high input impedance, wide input common mode and output voltage ranges plus low temperature drift enable it to be used in many applications formerly satisfied only by discrete amplifiers.

PIN CONFIGURATIONS



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5 Out of stock items. We return a copy of this order as delivery advice. You will note a column advising delay (in weeks) for out of stock items. We normally back order for one month and if not shipped available, the price will be credited and the order cancelled. However, if this is not satisfactory you have 2 options:
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B. Back order item until available or until further notice ☐
Note: Delivery times are based on from our suppliers. We have no control over their validity. If at any time you wish to cancel a back order, simply contact us and quote the number at top right hand corner. We will then credit you.

6 Check your order. Is the name and address clear? Mail to Dick Smith Electronics Pty Ltd 160-162 Pacific Highway, Gore Hill NSW 2065. Phone 439 5311 24 hour STD orders 439 5344

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We're always looking for some really keen enthusiasts to come and help us maintain and improve the standard of our mail order business. You'd need to be at least 105% thorough because we can't afford mistakes.

The business is growing very fast and we're finding it difficult to get the sort of dedicated enthusiast, like ourselves, to help keep people, like you, happy.

So if you build the projects, read the magazines from cover to cover and know what it's all about, how about dropping us a line?

If you live out of town come in for a six month working holiday. We'll even find you somewhere to live!

The advantages to you?

You could have the opportunity to build projects before anyone else.... a chance to try out new products.... we'll train you.....the pay is reasonable but not fantastic (after all it only adds to the price of things we sell) but there could be plenty of overtime to keep people happy.

Write to Dick Smith now telling him your age, qualifications (eg amateur licence, but really we're looking for thoroughness and enthusiasm) relevant experience etc. and who knows?

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Our bulk buying allows us to sell these branded semi-conductors at extremely competitive prices. Manufactured by Anadone, A.W.A., Fairchild, G.E., Motorola, R.C.A., Philips, S.T.C.



Device No.	Polarity & Function	Vce	Hfe	Power (mw)	Ft (mHz)
AC107	PNP Lo Noise Audio	15V	100	80	2
AC126	PNP Audio Driver	12V	100	216	1.7
AC128	PNP Audio Driver	12V	100	217	1.7
AC127	PNP Audio Output	12V	60	200	1.5
AC127/AC128	Output Pair	16V	80	260	1.0
AC128	PNP Audio Output	16V	80	260	1.0
AC132	PNP Audio Output	12V	115	216	1.3
AC172	PNP Lo Noise Audio	12V	60	200	1.5
AC187	PNP Audio Output	15V	200	800	1.0
AC187/AC188	Output Pair	15V	200	800	1.0
AC188	PNP Audio Output	15V	200	200	1.0
AC199	PNP Switch	30V	150	260	1.3
ACY20	PNP Switch	20V	80	260	1.0
ACY21	PNP Switch	20V	150	260	1.3
ACY22	PNP Switch	15V	200	260	1.0
ACY39	PNP Switch	40V	150	260	1.0
AD149 (OC26)	PNP Power	30V	60	32w	0.3
AD161/AD162	Output Pair	20V	150	4w	0.02
ADY26	PNP Power	60V	100	100w	0.1
ADZ11	PNP Power	40V	25	45w	0.08
ADZ12	PNP Power	80V	25	45w	0.08
AF114N (AF124)	PNP V.H.F.	15V	150	75	75
AF115N (AF125)	PNP H.F.	15V	150	75	75
AF116N (AF126)	PNP H.F.	15V	150	75	75
AF117N (AF127)	PNP H.F.	15V	150	75	75
AF118N	PNP H.F.	20V	35	375	175
ASY26	PNP Switch	15V	50	150	4.0
ASY29	PNP Switch	15V	100	150	10.0
ASY75	Symmetrical Switch	15V	65	140	10.0
ASZ15 (OC28)	PNP Power	60V	30	30w	0.2
ASZ16 (OC29)	PNP Power	32V	80	30w	0.25
ASZ17 (OC35)	PNP Power	32V	50	30w	0.22
ASZ18 (OC36)	PNP Power	32V	80	30w	0.22
ASZ21	PNP Hi Speed Switch	15V	30	120	300
AS300	PNP V.H.F. Amp	25V	27	125	750
AS301	PNP Amp	25V	27	125	750
AS302	PNP Amp	25V	70	125	750
AY8140	PNP Power	60V	20	10w	4
AY9140	PNP Power	60V	20	10w	4
AY8171	PNP Power	60V	20	35w	4
AY9171	PNP Power	60V	20	35w	4
AY8149	PNP Power	60V	20	115w	4
AY9149	PNP Power	60V	20	115w	4
BC107	PNP G.P.	45V	100	300	300
BC108 (2N3565)	PNP G.P.	20V	100	300	300
BC109	PNP Audio	20V	300	300	300
BC109C BC209C	PNP Audio	20V	450	300	300
BC147 (BC107)	PNP G.P.	45V	100	300	300
BC148	PNP G.P.	20V	100	300	300
BC149 (BC109)	PNP Audio	20V	300	300	300
BC157 (BC177)	PNP Audio	45V	150	300	150
BC158 (BC178)	PNP G.P.	20V	150	300	150
BC159 (BC179)	PNP Audio	20V	350	300	150
BC177	PNP Audio	45V	150	300	150
BC178	PNP Audio	20V	150	300	150
BC179	PNP Audio	20V	350	300	150
RC186	PNP G.P.	25V	300	150	50
BC187	PNP G.P.	25V	250	300	50
BC208A (BC108A)	PNP G.P.	20V	100	300	300
BCY11	PNP G.P.	60V	12	313	1.5
BCY31	PNP G.P.	50V	45	250	2.5
BCY32	PNP G.P.	50V	45	250	2.5
BCY33	PNP G.P.	25V	45	250	2.4
BCY34	PNP G.P.	24V	20	250	1.5
BCY38	PNP G.P.	40V	50	350	250
BCY70	PNP G.P.	45V	400	350	200
BCY71	PNP G.P.	45V	400	350	200
BCY72	PNP G.P.	25V	50	350	200
BD139	PNP Driver	80V	100	5.5w	250
BD139/BD140	Comp. Drivers	80V	100	6.5w	250
BDY20/2N3055	PNP Power	60V	20	115w	0.8
BF115	PNP R.F.	30V	100	145	230
BF167	PNP V.H.F.	30V	26	130	350
BF173	PNP V.I.F.	25V	37	230	550
BF177 (BF336)	PNP Video	60V	20	795	120
BF178 (BF336)	PNP Video	115V	20	1.7w	120
BF179 (BF337)	PNP Video	115V	20	1.7w	120
BF180	PNP V.H.F.	20V	13	150	675
BF184	PNP H.F.	20V	250	145	300
BF185	PNP H.F.	20V	100	145	220
BF336	PNP Video	180V	20	3w	80
BF337	PNP Video	200V	20	3w	80
BF338	PNP Video	225V	20	3w	80
BFW10 (2N5459)	N. Fet	25V		300	
BFW61	N. Fet	35V	30	2.8w	60
BFY50 (2N3053)	PNP G.P.	30V	40	2.8w	50
BFY51	PNP G.P.	30V	40	2.8w	50
BFY52	PNP G.P.	20V	60	2.8w	50
D1371 (MPU131)	P.U.T.			300	
MJE 2955	PNP Power	60V	20	90w	2
MJE3055	PNP Power	60V	20	90w	2
MPF102	V.H.F. Fet	25V		200	
MPF103 (2N5457)	V.H.F. Fet	25V		300	
MPF104 (2N5458)	V.H.F. Fet	25V		300	
MPF105 (2N5459)	N. Fet	25V		300	
MPF121	N. Mosfet	20V		500	
OC26 (AD149)	PNP Power	30V	60	30 W	0.3
OC28 (ASZ15)	PNP Power	60V	30	30 W	0.2
OC29 (ASZ16)	PNP Power	32V	80	30 W	0.25
OC35 (ASZ17)	PNP Power	32V	50	30 W	0.22
OC38 (ASZ18)	PNP Power	32V	80	30 W	0.22
OC44N	PNP G.P.	15V	100	80	12
OC45N	PNP G.P.	15V	100	80	12
OC71	PNP G.P.	10V	50	125	5
OC72	PNP Audio	16V	100	165	2
OC74N	PNP Audio	10V	100	550	2
OC75N	PNP G.P.	10V	100	125	2
SE1001 (TT1001)	PNP R.F.	45V	40	250	200
SE1010 (TT1010)	PNP R.F.	15V	20	250	200
SE4002	PNP G.P.	25V	200	200	60
SE4010	PNP Hi Gain	25V	300	200	60
TS688 (2N5245)	U.H.F. Fet	25V		300	
TT800	PNP G.P.	60V	100	5w	60
TT801	PNP G.P.	60V	100	5w	60
TT1001 (SE1001)	PNP R.F.	45V	40	250	200
TT1010 (SE1010)	PNP R.F.	15V	20	250	200
TT1112 (AY1112)	PNP G.P.	25V	60	200	40
TT3565 (BC108)	PNP G.P.	20V	100	300	300
TT3567 (2N3567)	PNP G.P.	40V	40	300	40
TT3568 (2N3568)	PNP G.P.	60V	40	300	40

Device No.	Polarity & Function	Vce	Hfe	Power (mw)	Ft. mHz
TT3638 (2N3638)	PNP G.P.	25V	30	300	100
TT3638A (2N3638A)	PNP G.P.	25V	100	400	100
TT3641 (2N3641)	PNP G.P.	30V	40	350	250
TT3642 (2N3642)	PNP G.P.	45V	40	350	250
TT3643 (2N3643)	PNP G.P.	30V	100	350	250
TT3645 (2N3645)	PNP G.P.	60V	115	300	200
TT4248 (2N4248)	PNP G.P.	40V	50	200	40
TT4249 (2N4249)	PNP G.P.	60V	100	200	40
TT4250 (2N4250)	PNP G.P.	40V	250	200	50
2N301 (2SB337)	PNP Power	32V	100	11w	0.2
2N301A	PNP Power	32V	100	11w	0.2
2N697 (BFY50)	PNP G.P.	35V	20	2.8w	60
2N706A	NPN Hi Speed	15V	30	300	200
2N708	NPN Hi Speed	15V	80	380	300
2N709	NPN Hi Speed	6V	80	300	600
2N1302	NPN G.P.	25V	20	150	3.0
2N1303	PNP G.P.	25V	20	150	3.0
2N1304	NPN G.P.	20V	80	150	5
2N2102 (40408)	NPN G.P.	120V	100	5w	60
2N219A	NPN G.P.	40V	200	800	300
2N2846 (MU10)	U.J.T.			360	
2N2847 (MU10)	U.J.T.			360	
2N3053 (BFY50)	PNP G.P.	35V	30	2.5w	60
2N3054 (40250)	NPN Power	60V	20	25w	0.8
2N3055 (BDY20)	NPN Power	60V	20	115w	0.8
2N3565 (BC108)	NPN G.P.	20V	100	300	300
2N3566	NPN G.P.	20V	60	300	200
2N3567 (TT3567)	NPN G.P.	40V	40	300	40
2N3568 (TT3568)	NPN G.P.	60V	40	300	40
2N3638 (TT3638)	PNP G.P.	25V	30	300	100
2N3640 (TT3640)	PNP G.P.	12V	100	200	300
2N3641 (TT3641)	NPN G.P.	30V	40	350	250
2N3642 (TT3642)	NPN G.P.	45V	40	350	250
2N3643 (TT3643)	NPN G.P.	30V	100	350	250
2N3644 (TT3644)	PNP G.P.	40V	115	300	200
2N3645 (TT3645)	PNP G.P.	60V	115	300	200
2N3646	NPN G.P.	25V	40	200	200
2N3691	NPN G.P.	25V	40	200	200
2N3692	NPN G.P.	25V	100	200	200
2N3693	NPN R.F.	45V	40	200	200
2N3694	NPN R.F.	45V	100	200	200
2N3819 (BFW10)	N. Fet	25V		300	
2N4889					
2N5245 (TIS88)	U.H.F. Fet	25V		300	
2N5457 (MPF103)	N. Fet	25V		300	
2N5458 (MPF104)	U.H.F. Fet	25V		300	
2N5459 (MPF105)	N. Fet	25V		300	
2N5485	N. Fet	25V		300	
2N6027 (D13T1)	P.U.T.			300	
2SH16 (MU10)	U.J.T.			300	
2SH17A (MU10)	U.J.T.			300	
40250 (2N3054)	NPN Power	60V	20	25w	0.8
40360	NPN Driver	80V	50	1w	80
40361	NPN Power	80V	50	1w	80
40406	PNP G.P.	60V	50	1w	80
40407	NPN G.P.	60V	50	1w	80
40408 (2N2102)	NPN G.P.	100V	50	1w	80
40409	NPN G.P.	100V	50	3w	50
40410	PNP G.P.	100V	50	3w	100

NEAR EQUIVALENTS TABLE

UK transistor equivalents supplied by Electrovalue for you people who insist on using penny circuits.

1024	0401	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1025	0402	2N3638	NET707	2N128-81	2N1308	2N3020	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1026	0403	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1027	0404	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1028	0405	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1029	0406	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1030	0407	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1031	0408	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1032	0409	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1033	0410	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1034	0411	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1035	0412	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1036	0413	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1037	0414	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1038	0415	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1039	0416	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1040	0417	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1041	0418	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1042	0419	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1043	0420	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1044	0421	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1045	0422	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1046	0423	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1047	0424	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1048	0425	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1049	0426	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1050	0427	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1051	0428	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1052	0429	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1053	0430	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1054	0431	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1055	0432	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1056	0433	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1057	0434	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1058	0435	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1059	0436	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1060	0437	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1061	0438	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1062	0439	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1063	0440	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1064	0441	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1065	0442	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1066	0443	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1067	0444	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1068	0445	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1069	0446	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1070	0447	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1071	0448	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1072	0449	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1073	0450	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1074	0451	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1075	0452	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1076	0453	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1077	0454	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1078	0455	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1079	0456	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1080	0457	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1081	0458	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1082	0459	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1083	0460	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1084	0461	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1085	0462	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1086	0463	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1087	0464	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1088	0465	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1089	0466	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1090	0467	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1091	0468	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1092	0469	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1093	0470	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1094	0471	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1095	0472	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1096	0473	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1097	0474	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1098	0475	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1099	0476	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1100	0477	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1101	0478	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1102	0479	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1103	0480	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1104	0481	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1105	0482	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1106	0483	2N3638	NET707	2N128-81	2N1308	2N3015	2N2118	2N3060-2	NET804F	1A71-2	NET404	NET127	NET127
1107	04												

SCRS, TRIACS AND DIACS GE



WHAT IS AN SCR? The SCR is best described as a gate-controlled rectifier. By applying a little current to the gate it can be made to change from an open circuit to a rectifier capable of passing large currents in one direction only. Unfortunately once the gate has fired the SCR, removal of the gate current does not switch it off again and a separate means of switching off has to be devised.

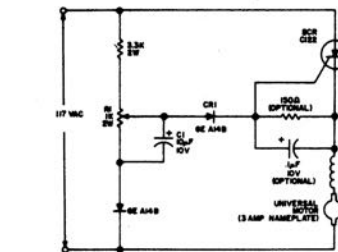
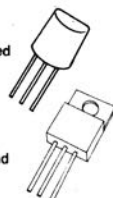
WHAT IS A TRIAC? The Triac is a three terminal switch similar to the SCR but for switching AC. It can be triggered into conduction by a current in either direction. It functions in exactly the same way as two SCRs back to back with a common gate.

WHAT IS A DIAC? The diac is in effect two diodes of opposite polarity in series. It will not conduct current until the applied voltage reaches a certain level when transistor action causes the current to increase and the voltage to drop. It is used to trigger triacs.

C103 SERIES SCRs Feature a 200, uA gate sensitivity and will withstand surges up to 8A. Housed in a plastic TO-18 package.

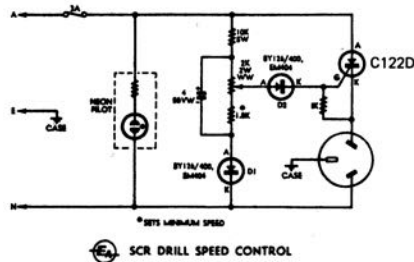
C106 SERIES Uses the planar passivated process and operates directly from low signal source sensors. Plastic encapsulation designed for high density packaging.

C122 SERIES Uses the glassivation process for maximum reliability in AC and DC circuits. Round leads and no limit to how tight you clamp it.



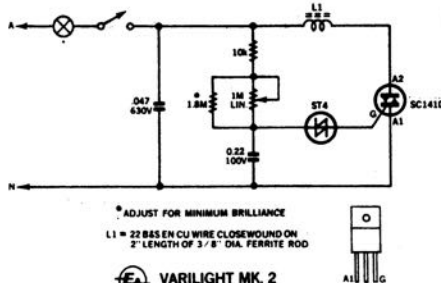
This circuit uses the counter EMF of the motor armature due to residual field as a feedback signal of motor speed to maintain essentially constant speed characteristics with varying torque requirements. There will be some variation in the effectiveness of speed control from one motor to another depending on the magnitude of the residual field for the particular motor.

During the positive half cycle of the supply voltage, a reference voltage is established on the arm of the potentiometer R_1 which is compared with the counter EMF of the motor through the gate of the SCR. When the "pot" voltage rises above the counter EMF, current flows through CR_1 into the gate of the SCR, and thus applying the remainder of that half cycle of supply voltage to the motor. If load is applied to the motor, its speed tends to decrease, thus decreasing counter EMF in proportion to speed. The "pot" reference voltage thus causes current to flow into the SCR gate earlier in the cycle. The SCR triggers earlier in the cycle, and additional voltage is applied to the armature to compensate for the increased load and to maintain the preset speed. The particular speed at which the motor operates can be selected by R_1 . Stable operation is possible over approximately a 10 to 1 speed range. Stability at very low speeds can be improved by reducing the value of C_1 at the expense of feedback gain.



The circuit of the SCR Speed Control. Note that no RF interference suppression components have been included, as they are rendered largely unnecessary by the inductance of the motor.

SC141/146 TRIACS Feature the glassivated construction for maximum reliability. They are inherently immune to transient effects and have no maximum torque limits on mounting screws (crushproof?)



Use of an ST4 allows simple circuit. Interference suppression is included.

ELECTRONICS Australia, April, 1973

ST4 ASYMMETRICAL AC TRIGGER is intended for use with triac phase controllers and reduces the snap-on effect so common in symmetrical control circuits. The performance is achieved with only a single time constant. In a conventional trigger circuit, the capacitor voltage drops on the first firing, on the next half cycle triggering will occur sooner because the capacitor is still the capacitor voltage drops as it first discharges into the gate. During the next half cycle, the capacitor voltage exceeds breakover sooner since it started charging from a lower voltage. There is thus a large step in the transfer function. The ST4 is constructed such that the triggering voltage on this second half cycle is equal to the breakover voltage plus the voltage decrease due to the capacitor discharge into the gate. Thus the same time relationship and firing angle exist.

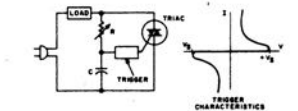


Figure 1. Typical triac phase-control circuit with hysteresis.

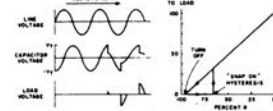


Figure 2. Typical waveforms illustrating hysteresis effect.



Specifications
Max continuous current
Average Power
Temperature range
Switching voltages

: 200mA
: 350mW
: -55°C to +125°C
: VS1 14V min 18V max
: VS2 7V min 9V max

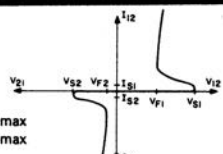


FIGURE 5. ST4 ELECTRICAL CHARACTERISTICS

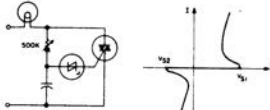


Figure 3. Typical triac phase-control circuit with an asymmetrical switch.

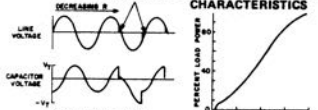
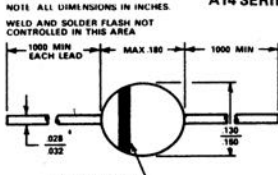


Figure 4. Hysteresis-free, cost-optimized, circuit performance.

GENERAL ELECTRIC
glassivated
rectifiers
The reliable
rectifier

GE Low current rectifier
A14 SERIES



Special Features of GE Low Current Rectifier

1. Glassivated Pellet
 - (a) Seals out contaminants. Long-term stability, V_F and I_n
 - (b) No organic material next to pellet as used in some epoxy package rectifiers.
 - (c) No cavity around pellet which can create particle problems.
2. Glass (non-conductive) Package — Hermetic seal.
3. Dual heat sink construction.
4. Smaller package size than metal packages.
5. Electro plated tinned leads.
6. Transient Voltage Protection.
7. One amp continuous from 75°C to 100°C ambient temperatures.

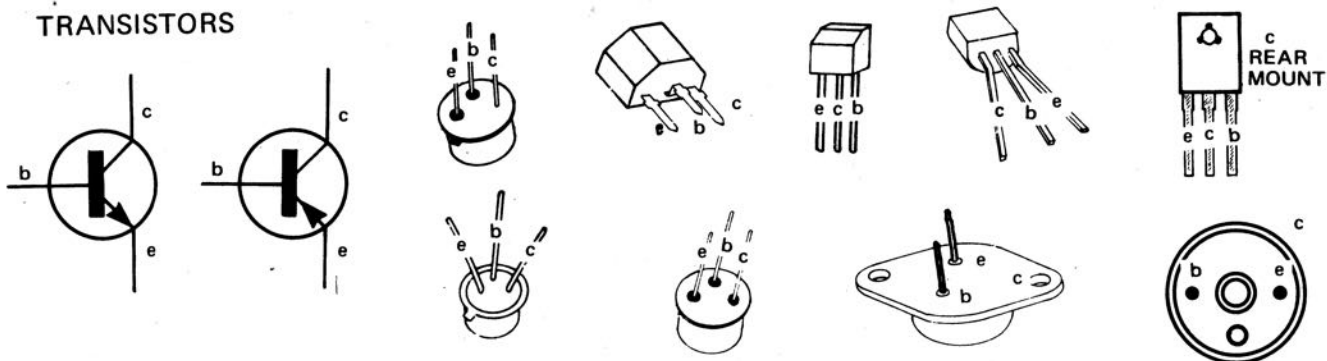
MINIBRIDGE
MINIATURE SILICON POWER RECTIFIERS
SINGLE PHASE FULL WAVE BRIDGES

PB40 SERIES ELECTRICAL CHARACTERISTICS

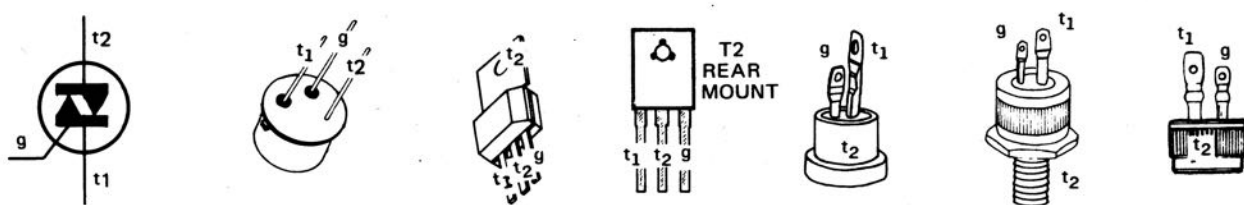


Peak One-Cycle Surge (60 Hz) 300 Amps Max.
Peak Recurrent Forward Current 75 Amps Max.
DC Forward Voltage per Leg
At 3 Amps DC and 25°C 1 Volt Max.
DC Reverse Current
At Rated PIV and 25°C 10 μ A Max.
At Rated PIV and 100°C 100 μ A Max.
Maximum I^2T (≤ 8 MS) 360 Amp²Sec.

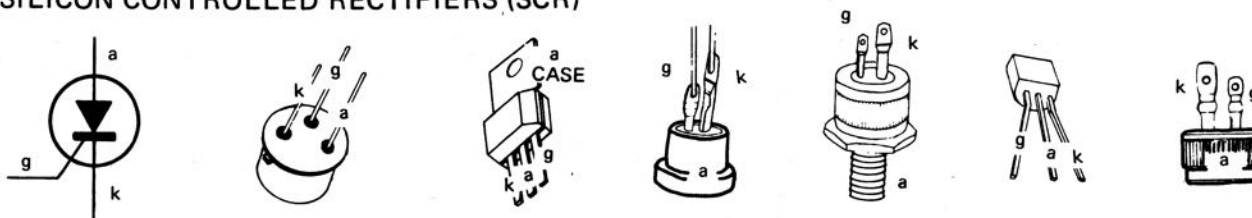
TRANSISTORS



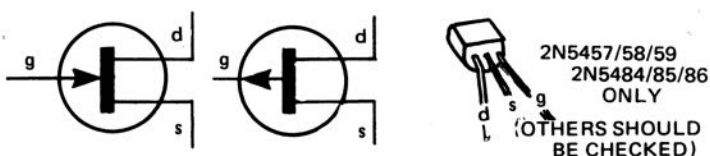
TRIACS



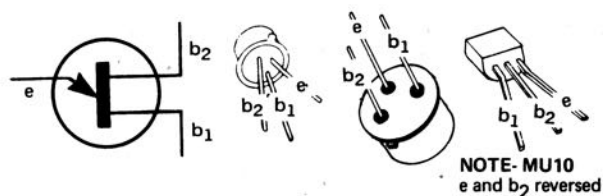
SILICON CONTROLLED RECTIFIERS (SCR)



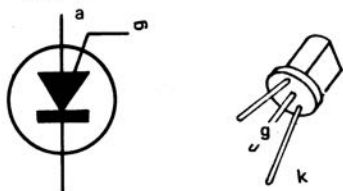
FIELD EFFECT TRANSISTOR (FET)



UNIUNCTION TRANSISTOR



(PUT)



MOSFETS



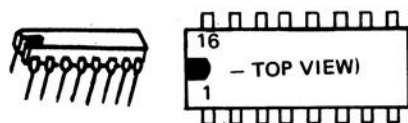
DIN CONNECTIONS



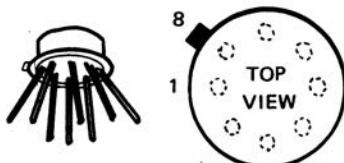
VIEWS FROM FRONT OF SOCKET

INTEGRATED CIRCUITS

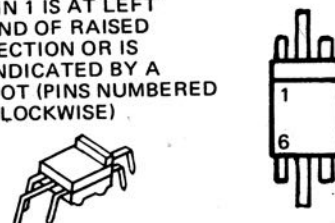
**PIN 1 IS TO LEFT OF ORIENTATION MARK
(PINS NUMBERED ANTICLOCKWISE)**



PIN 1 IS TO LEFT OF TAG, NUMBERS
INCREASING ANTICLOCKWISE



PIN 1 IS AT LEFT
END OF RAISED
SECTION OR IS
INDICATED BY A
DOT (PINS NUMBERED
CLOCKWISE)





SOLID STATE SCIENTIFIC INC.

10000, KIRKVILLE, MISSOURI 64501

CEMA (DISTRIBUTORS) PTY. LTD. FOR PRICES SEE PAGE 62

2N5589 VHF COMMUNICATIONS TRANSISTOR

DESCRIPTION

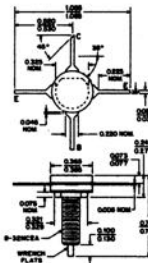
SSS device type 2N5589 is an epitaxial silicon NPN-planar transistor designed primarily for VHF mobile and marine transmitters. This device utilizes ballasted emitter resistors and improved metallization systems to achieve extreme ruggedness under severe operating conditions.

FEATURES:

- designed for VHF mobile and marine transmitters.
- 3.0 watts (minimum) with greater than 8.2 db gain at 12.5 volts
- withstand severe mismatch under operating conditions
- low inductance stripline package
- all leads electrically isolated from stud

ABSOLUTE MAX. RATINGS (+25°C except where noted)

V _{CB0}	: Collector-Base Voltage	36.0 V
V _{CE0}	: Collector-Emitter Voltage	18.0 V
V _{EB0}	: Emitter-Base Voltage	4.0 V
I _C (max)	: Collector Current	6 A
P _T	: Total Device Dissipation at +25°C	15.0 Watts
θ _J	: Thermal Resistance to Stud	11.7°C/W
T _J	: Junction Temperature (operating)	+200°C
T _S	: Storage Temperature	-65°C to +200°C



2N5590 VHF COMMUNICATIONS TRANSISTOR

DESCRIPTION

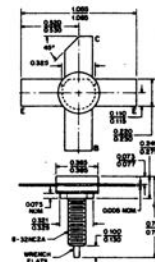
SSS device type 2N5590 is an epitaxial silicon NPN-planar transistor designed primarily for VHF mobile and marine transmitters. This device utilizes ballasted emitter resistors and improved metallization systems to achieve extreme ruggedness under severe operating conditions.

FEATURES:

- designed for VHF mobile and marine transmitters
- 10.0 watts (minimum) with greater than 5.2 db gain at 12.5 volts.
- withstands severe mismatch under operating conditions
- low inductance stripline package
- all leads electrically isolated from stud

ABSOLUTE MAX. RATINGS (+25°C except where noted)

V _{CB0}	: Collector-Base Voltage	36.0 V
V _{CE0}	: Collector-Emitter Voltage	18.0 V
V _{EB0}	: Emitter-Base Voltage	4.0 V
I _C (max)	: Collector Current	2.0 A
P _T	: Total Device Dissipation at +25°C	30 Watts
θ _J	: Thermal Resistance to Stud	5.83°C/W
T _J	: Junction Temperature (operating)	+200°C
T _S	: Storage Temperature	-65°C to +200°C



2N5591 VHF COMMUNICATIONS TRANSISTOR

DESCRIPTION

SSS device type 2N5591 is an epitaxial silicon NPN-planar transistor designed primarily for VHF mobile and marine transmitters. This device utilizes ballasted emitter resistors and improved metallization systems to achieve extreme ruggedness under severe operating conditions.

FEATURES:

- designed for VHF mobile and marine transmitters
- 25.0 watts (minimum) with greater than 4.4 db gain at 12.5 volts
- withstands severe mismatch under operating conditions
- low inductance stripline package
- all leads electrically isolated from stud

ABSOLUTE MAX. RATINGS (+25°C except where noted)

V _{CB0}	: Collector-Base Voltage	36.0 V
V _{CE0}	: Collector-Emitter Voltage	18.0 V
V _{EB0}	: Emitter-Base Voltage	4.0 V
I _C (max)	: Collector Current	4.0 A
P _T	: Total Device Dissipation at +25°C	70 Watts
θ _J	: Thermal Resistance to Stud	5.83°C/W
T _J	: Junction Temperature (operating)	+200°C
T _S	: Storage Temperature	-65°C to +200°C

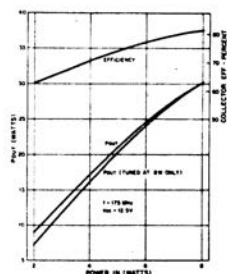


Figure 1 - Power Output vs. Power Input

f = 175 MHz, V _{CE} = 12.5V				
P _{IN} WATTS	P _{OUT} WATTS	INPUT OHMS	OUTPUT OHMS	
2.0	10.0	.99 - J 1.2	4.5 + J 4.3	
4.0	17.0	1.1 - J 1.3	4.3 + J 2.7	
6.0	24.8	1.3 - J 1.5	4.0 + J 2.0	
8.0	30.2	1.3 - J 1.5	3.9 + J 1.7	

Figure 2 - Network Impedance at Transistor Terminals

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV _{CEO}	I _C = 200mA, I _B = 0	18.0	—	—	V _{dc}
Collector-Emitter Breakdown Voltage*	BV _{CES}	I _C = 200mA, V _{BE} = 0	36.0	—	—	V _{dc}
Emitter-Base Breakdown Voltage	BV _{EB0}	I _E = 1mA, I _C = 0	4.0	—	—	V _{dc}
Collector Cut Off Current	I _{CBO}	V _{CB} = 15V, I _B = 0	—	—	1.0	mA
DC Current Gain	h _{FE}	V _{CE} = 5V, I _C = 100mA	5.0	—	—	—
Collector Cut Off Current	I _{CES}	V _{CE} = 15V, V _{BE} = 0, T _A = +100°C	—	—	10.0	mA

*Pulsed through 25mH inductor

RF Characteristics: Small Signal

Gain Bandwidth Product [100 MHz]	f(t)	V _{CE} = 13.5V, I _C = 100mA	200	—	—	MHz
Output Capacitance	C _{ob}	V _{CB} = 12.5V, I _B = 0, f ₀ = 1.0MHz	—	—	30.0	pF
Input Capacitance	C _{ib}	V _{BE} = 0.5V, I _C = 0, f ₀ = 1.0 MHz	—	62	—	pF

RF Characteristics: Large Signal

Amplifier power out	P _O	f ₀ = 175MHz, V _{CE} = 13.5V	—	3.0	—	watts
Amplifier power gain	P _g	P _O = 3.0W, I _C = 0.44A	8.2	—	—	dB
Collector Efficiency	η	P _O = 3.0W, V _{CE} = 13.5V	50.0	—	—	%
Impedance-Input	Z _{in}	f ₀ = 175MHz, V _{CE} = 12.5V	—	—	—	ohms
Impedance-Output	Z _{out}	f ₀ = 175MHz, V _{CE} = 12.5V	—	—	—	ohms

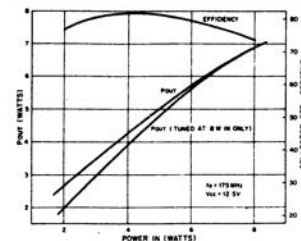


Figure 1 - Power Output vs. Power Input

f = 175 MHz, V _{CE} = 12.5V				
P _{IN} WATTS	P _{OUT} WATTS	INPUT OHMS	OUTPUT OHMS	
0.2	2.6	2.9 + J 0.5	15.0 + J 16.8	
0.4	4.2	3.5 + J 0.2	14.2 + J 10.4	
0.6	5.7	3.7 - J 0.1	13.0 + J 7.3	
0.8	7.1	4.0 - J 0.3	12.3 + J 5.8	

Figure 2 - Network Impedance at Transistor Terminals

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV _{CEO}	I _C = 200mA, I _B = 0	18.0	—	—	V _{dc}
Collector-Emitter Breakdown Voltage*	BV _{CES}	I _C = 200mA, V _{BE} = 0	36.0	—	—	V _{dc}
Emitter-Base Breakdown Voltage	BV _{EB0}	I _E = 2.5mA, I _C = 0	4.0	—	—	V _{dc}
Collector Cut Off Current	I _{CBO}	V _{CB} = 15V, I _B = 0	—	—	1.0	mA
DC Current Gain	h _{FE}	V _{CE} = 5V, I _C = 250mA	5.0	—	—	—
Collector Cut Off Current	I _{CES}	V _{CE} = 15V, V _{BE} = 0, T _A = +100°C	—	—	10.0	mA

*Pulsed through 25mH inductor

RF Characteristics: Small Signal

Gain Bandwidth @100MHz	f(t)	V _{CE} = 13.5V, I _C = 100mA	200	—	—	MHz
Output Capacitance	C _{ob}	V _{CB} = 12.5V, I _B = 0, f ₀ = 1.0MHz	—	—	70.0	pF
Input Capacitance	C _{ib}	V _{BE} = 0.5V, I _C = 0, f ₀ = 1.0MHz	—	188	—	pF

RF Characteristics: Large Signal

Amplifier power out	P _O	f ₀ = 175MHz, V _{CE} = 13.5V	—	10.0	—	watts
Amplifier power gain	P _g	P _O = 10W, I _C = 1.47A	5.2	—	—	dB
Collector Efficiency	η	P _O = 10W, V _{CE} = 13.5V	50	—	—	%
Impedance-Input	Z _{in}	f ₀ = 175MHz, V _{CE} = 12.5V	—	—	—	ohms
Impedance-Output	Z _{out}	f ₀ = 175MHz, V _{CE} = 12.5V	—	—	—	ohms

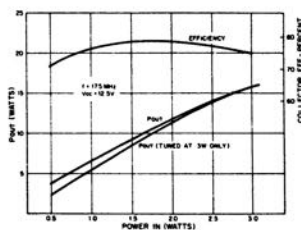


Figure 1 - Power Output vs. Power Input

f = 175 MHz, V _{CE} = 12.5V				
P _{IN} WATTS	P _{OUT} WATTS	INPUT OHMS	OUTPUT OHMS	
0.5	3.8	1.4 + J 2.0	9.0 + J 8.9	
1.0	6.6	1.5 + J 2.4	10.0 + J 5.1	
2.0	11.8	1.6 + J 2.5	8.6 + J 1.3	
3.0	15.8	1.8 + J 2.6	6.9 - J 0	

Figure 2 - Network Impedance at Transistor Terminals

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage*	BV _{CEO}	I _C = 200mA, I _B = 0	18.0	—	—	V _{dc}
Collector-Emitter Breakdown Voltage*	BV _{CES}	I _C = 200mA, V _{BE} = 0	36.0	—	—	V _{dc}
Emitter-Base Breakdown Voltage	BV _{EB0}	I _E = 5mA, I _C = 0	4.0	—	—	V _{dc}
Collector Cut Off Current	I _{CBO}	V _{CB} = 15V, I _B = 0	—	—	1.0	mA
DC Current Gain	h _{FE}	V _{CE} = 5V, I _C = 0.5A	5.0	—	—	—
Collector Cut Off Current	I _{CES}	V _{CE} = 15V, V _{BE} = 0, T _A = +100°C	—	—	10.0	mA

*Pulsed through 25mH inductor

RF Characteristics: Small Signal

Gain Bandwidth @ 100MHz	f(t)	V _{CE} = 13.5V, I _C = 0.15A	200.0	—	—	MHz
Output Capacitance	C _{ob}	V _{CB} = 12.5V, I _B = 0, f ₀ = 1.0MHz	—	—	120	pF
Input Capacitance	C _{ib}	V _{BE} = 0.5V, I _C = 0, f ₀ = 1.0MHz	—	480	—	pF

RF Characteristics: Large Signal

Amplifier power out	P _O	f ₀ = 175MHz, V _{CE} = 13.5V	—	25	—	watts
Amplifier power gain	P _g	P _O = 25W, I _C = 2.4A	4.4	—	—	dB
Collector Efficiency	η	P _O = 25W, V _{CE} = 13.5V	50	—	—	%
Impedance-Input	Z _{in}	f ₀ = 175MHz, V _{CE} = 12.5V	—	—	—	ohms
Impedance-Output	Z _{out}	f ₀ = 175 MHz, V _{CE} = 12.5V	—	—	—	ohms

CEMA (DISTRIBUTORS) PTY LTD

Red-Lit 209
(T1L209)

LIGHT EMITTING DIODE

- Miniature Size (T-1 Lamp)
- Low Power Consumption
- IC Compatible
- Economical Molded Plastic Package

The Red-Lit 209 and Red-Lit T1 are intended for high volume usage in array and indicator light applications requiring long life at low cost.

Note:
The RL-209/RL-T1 are red diffused for maximum off angle viewing.



Red-Lit 21

LIGHT EMITTING DIODE

- Front Panel Mounting
- Large Full Flood Radiating Area
- Low Power Consumption
- IC Compatible
- Economical Molded Plastic Package

The Red-Lit 20 with a large front radiating area is ideal for head on viewing. The Red-Lit 21 offers extra wide off angle viewing.

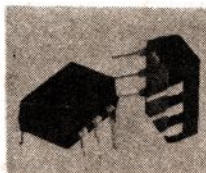
Note:
The Red-Lit 20/21 molded package is red diffusive

Iso-Lit 1

PHOTOTRANSISTOR
OPTO-ISOLATOR

FEATURES

- 2500 Volt Breakdown Voltage
- Iso-Lit 1 - 35% Typical Transfer Ratio (Equivalent to MCT-2)
- Iso-Lit 5 - 70% Typical Transfer Ratio
- Industry Standard Dual-In-Line
- 0.5 pF Coupling Capacitance



DESCRIPTION

IL-1/IL-5 is an optically coupled pair employing a Gallium Arsenide infrared LED and a silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output. The IL-1/IL-5 can be used to replace relays and transformers in many digital interface applications, as well as analog applications such as CRT modulation.

0.3 INCH SEVEN SEGMENT
COMMON ANODE
RED NUMERIC DISPLAYS

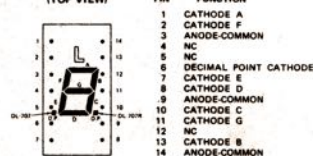
FEATURES

- Left or Right Hand Decimal
- Easy to Read 0.3" Character
- Low Cost, Light Pipe Construction
- IC Power Supply Compatible
- Intensity Color Coded for Display Uniformity
- Standard 14 Pin Dual-In-Line Package

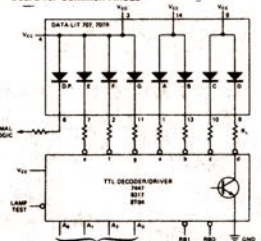
DESCRIPTION

The DL-707, DL707R, and DL-701 are 0.3 inch high red numeric LED display digits designed for viewing distances up to 10 feet. The light pipe construction insures a broad stroke width allowing comfortable viewing for extended periods of time. A black plastic cap surrounding the bar segments provides good contrast.

(TOP VIEW)

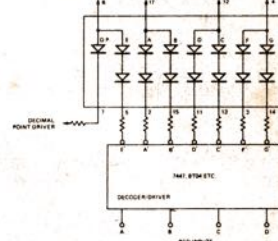
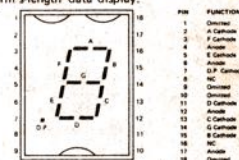


Jumper Pins 3, 9, and 14 on Circuit Board for Common Anode

SEVEN SEGMENT
NUMERIC DISPLAY

- Large Character Height (0.6") for Distance Viewing
- High Luminance - 500 ft-Lamberts at 20 mA
- IC Compatible
- Solid State Reliability
- Dual-In-Line (MOS Type) Package

The Data-Lit 62 is a seven-segment, Gallium Arsenide Phosphide red light-emitting diode numeric display. Its six-tenths-inch character height exceeds the distance-viewing specifications generally required for control panels, digital time clocks and other beyond-arm's-length data display.



INDICATOR AND PANEL	Part Number	Alternate Source Part Number	Lens Description	Features	Cont Fwd Current (Max)	PIV	Light Output At Typical Current	Fwd Voltage (Typical)	Physical Dimensions
	RL-209	T1L-209 5082-4480	Red diffusive	Subminiature radial lead. Low cost.	40 mA	3.0V	0.8 MCD $I_F = 20 \text{ mA}$	1.7V $I_F = 20 \text{ mA}$	
	RL-21	FLV110	Red diffusive	High luminance. Large full flood radiating area. Extra wide viewing angle 180° (red diffusive only)	100 mA	3.0V	1.2 MCD $I_F = 20 \text{ mA}$	1.7V $I_F = 50 \text{ mA}$	

OPTO-ISOLATORS	Part Number	Alternate Source Part Number	Description	Current Transfer Ratio	Isolation Breakdown Voltage	Cont Fwd Current LED (Max)	PIV LED (Max)	BV _{CEO} DET. (Max)	I _{CEO} (dark)	V _{CE} SAT	Physical Dimensions
	IL-1	MCT-2 FCD811 FCD820 (1500V) H11A3 (1500V)	Optically coupled pair employing an infrared LED & NPN photo transistor. TTL compatible.	Min. 0.2 Typ. 0.35 no max.	2500	100 mA	3.0V	30V	5 nA V _{CE} = 10V $I_F = 0$	0.4V Max $I_C = 1.6 \text{ mA}$ $I_F = 16 \text{ mA}$	
	IL-5	H11A1		0.5 0.70							

DATA-LIT 700 SERIES NUMERIC DISPLAYS	Part Number	Alternate Source Part Number	Character Height	Polarity	Description	Light Output At Typical Current	Fwd Voltage (Typical)	Physical Dimensions
	DL-707	MAN-7	0.30"	Common Anode	Low cost, 7 segment, solid bar, D. P. left, 14-pin DIP	0.7 MCD $I_F = 10 \text{ mA}$	1.7V $I_F = 20 \text{ mA}$	

litronix the bright guys

SINGLE DIGIT NUMERIC DISPLAYS	Part Number	Alternate Source Part Number	Character Height	Polarity	Description	Light Output At Typical Current	Forward Voltage (Typical)	Physical Dimensions
	DL-62	MAN-6 (Different Pkg.)	0.6"	Common Anode	7-segment, D. P. left. Oversize DIP (0.6 pin spacing).	350 ft-L $I_F = 20 \text{ mA}$	3.4V $I_F = 20 \text{ mA}$	

FORMULAS

Formulas supplied by:
I.M.D. PTY. LTD., Electronic Engineers, High Street, Willoughby, N.S.W.

OHMS LAW $E = I \times R$ or $R = \frac{E}{I}$ or $I = \frac{E}{R}$

E = Volts
I = Current in Amps
R = Resistance in Ohms

POWER $P = E \times I$ $I = \frac{P}{E}$ $E = \frac{P}{I}$

P = Power in Watts
E = Volts
I = Current in Amps

CAPACITIVE REACTANCE $X_c = \frac{1}{2\pi fC}$

X_c = Capacitive Reactance in Ohms
f = Frequency in Hertz
C = Capacitance in Farads
 $\pi = 3.14$

INDUCTIVE REACTANCE $X_L = 2\pi fL$

X_L = Inductive reactance in Ohms
f = Frequency in Hertz
L = Inductance in Henries
 $\pi = 3.14$

RESONANT FREQUENCY $F = \frac{1}{2\pi\sqrt{LC}}$

F = Frequency in Hertz
L = Inductance in Henries
C = Capacitance in Farads
 $\pi = 3.14$

CONVERSION FACTORS

LENGTH

1 Centimetre	=	0.393701 inch
1 Metre	=	39.3701 inches
1 inch	=	2.54 Centimetres
1 Foot	=	30.48 Centimetres
1 Yard	=	91.44 Centimetres
1 Mile	=	1.621371 Kilometres
1 Lightyear	=	5.87848 x 10 ¹² miles!!

MASS

1 Pound	=	0.453592 Kilograms
1 Kilogram	=	2.20462 Pounds

TEMPERATURES

To convert from Fahrenheit to Centigrade subtract 32° and multiply by 5/9.
To convert from Centigrade to Fahrenheit multiply by 9/5 and add 32°.

PHONETIC ALPHABET

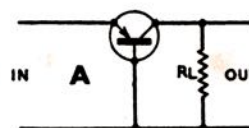
A— Alfa	H— Hotel	O— Oscar	V— Victor
B— Bravo	I— India	P— Papa	W— Whiskey
C— Charlie	J— Juliett	Q— Quebec	X— X-ray
D— Delta	K— Kilo	R— Romeo	Y— Yankee
E— Echo	L— Lima	S— Sierra	Z— Zulu
F— Foxtrot	M— Mike	T— Tango	
G— Golf	N— November	U— Uniform	

MORSE CODE

A .-.-	J .-.-.-	S ...
B -.-.-	K -.-	T -
C -.-.-	L .-.-	U ..-
D -.-	M --	V .-.-
E .	N --	W -.-
F .-.-	O ---	X -.-
G ---	P .-.-	Y -.-
H	Q ---	Z ---
..	R ---	

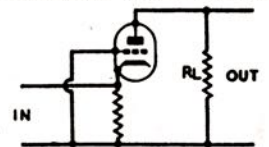
TRANSISTOR DETAIL

TRANSISTOR CIRCUIT

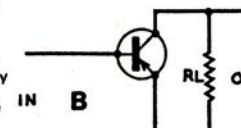


GROUNDING BASE

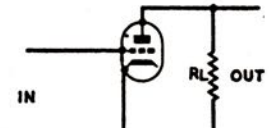
EQUIVALENT VALVE CIRCUIT



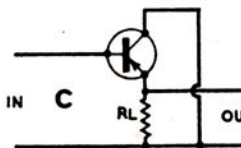
GROUNDING GRID



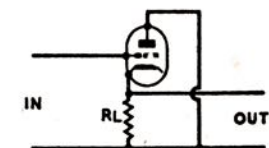
GROUNDING EMITTER



GROUNDING CATHODE



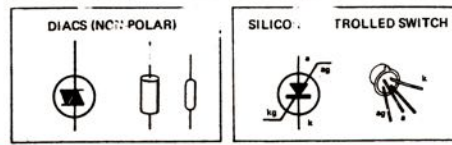
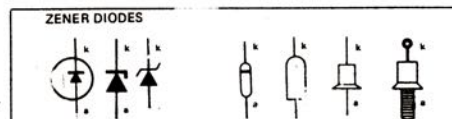
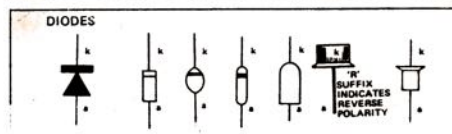
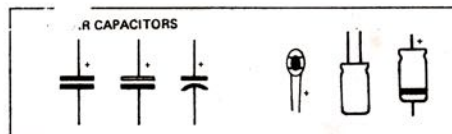
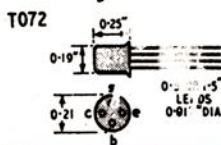
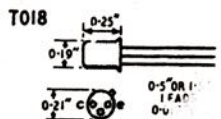
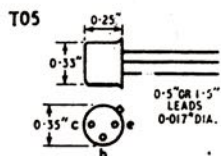
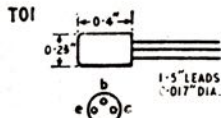
GROUNDING COLLECTOR



CATHODE FOLLOWER

GENERAL CHARACTERISTICS OF TRANSISTOR CONFIGURATION:

	Circuit Configuration		
	A	B	C
Current Gain	<1 (.98)	High (50)	High (50)
Voltage Gain	High	High	<1
Input Impedance	Low (40)	Medium (2K ohms)	High (100K ohms)
Output Impedance	High (1 Megohm)	Medium (30K ohms)	Low (1K ohm)
Power Gain	Medium (30dB)	High (40db)	Low (16db)
Cut-off Freq.	High	Low	depends on R_L
Voltage Phase Shift (L.F.)	<Zero	<180°	<Zero



CHOOSING SPEAKERS

SIZE Generally 2" to 15" diameter and quality improves as they get larger since the low frequencies are reproduced better. Oval speakers are a good compromise in restricted spaces.

POWER Gives an indication of the volume of sound without distortion. A transistor radio for example is around 0.25W, a good HI FI is 20W or even higher.

FREQUENCY RESPONSE Indicates lowest and highest frequencies reproduced but no guide to quality of sound, a flat 100Hz to 8,000Hz is a lot better than a bumpy 60 to 15,000Hz. The best judge is your ears: be suspicious of specifications.

MATCHING The speakers impedance in ohms should match the output of the amplifier. Most commonly used are 8 and 15 ohms. A mismatch will usually only reduce the power available — be careful when adding speakers, in parallel reduces impedance, in series increases it.

PHASING This is important when several speakers are driven by one amp! (also in stereo systems). Many speakers and amps have polarity marked, always connect + to +. If not marked check by touching a 1.5V torch battery across speaker leads and mark the polarity that makes the cone move in +.

ENCLOSURES The trouble is sound produced by the back of the cone interferes with sound from the front. This must be prevented either by losing the back sound inside a box full of absorbent material or by using a large board (baffle) to keep them apart or by some of the exotic boxes that reflect the sound. Numerous books are available on the subject.

WIRING To avoid losses and mismatch check this table. In general the thicker the wire (lower gauge) the greater the distance.

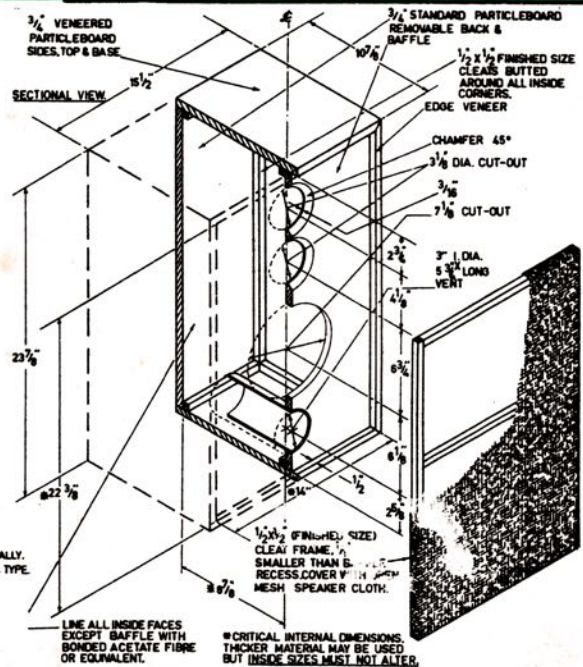
WIRE	3-4 ohm	8 ohm	15 ohm
18swg	40'	80'	160'
20swg	25'	50'	100'
24swg	10'	20'	40'

NOTE

1. FREQUENCY RESPONSE 35Hz-18KHz.
2. POWER HANDLING CAPACITY-30 WATTS R.M.S.
3. MAY BE USED VERTICALLY, IDEALLY OR HORIZONTALLY.
4. CAPACITOR TO BE MINIMUM 50 VOLT NON-ELECTROLYTIC TYPE. E.G. PAPER, POLYESTER, LACQUERED FILM.
5. ALL JOINTS TO BE AIRTIGHT INCLUDING ELECTRICAL CONNECTIONS THROUGH BACK PANEL.
6. OBSERVE CORRECT SPEAKER POLARITY.
7. VENT MADE FROM RIGID CARDBOARD OR PLASTIC. TUBE 3" INTERNAL DIAMETER X 5 1/2" LONG.

MAGNAVOX

MAGNAVOX 8.30 SPEAKER
CABINET DESIGN (1.6 cubic ft)



amateur radio

(Amateur information supplied by AMATEUR COMMUNICATIONS ADVANCEMENTS publishers of 6UP)

Amateur radio is a hobby for those interested in the art and techniques, as well as the science, of radio communications and associated electronics.

In Australia, amateurs are represented by a voluntarily conducted society called the Wireless Institute of Australia which has offices in each state which conduct regular meetings for the benefit of members and anybody else interested. A list of divisional addresses is given below. Enquiries concerning amateur radio should be directed to the appropriate address.

FREQUENCY BANDS

Medium Frequency	: 1.8 to 1.86 MHz
High Frequency (HF)	: 3.5 to 3.7 MHz : 7.0 to 7.1 MHz : 14.0 to 14.35 MHz : 21.0 to 21.45 MHz : 26.96 to 27.23 MHz : 28.0 to 29.7 MHz
Very High Frequency (VHF)	: 52.0 to 54.0 MHz : 144.0 to 148.0 MHz
Ultra High Frequency (UHF)	: 420 to 450 MHz : 576 to 585 MHz : 1215 to 1300 MHz : 2300 to 2450 MHz
Super High Frequency (SHF)	: 3.3 to 3.5 GHz : 5.65 to 5.85 GHz : 10.0 to 10.5 GHz : 21.0 to 22.0 GHz

LICENSING

The Postmaster General's Department conducts twice-yearly examinations (February and August) for the amateur operator's certificate of proficiency at centres throughout Australia. There are two classes of license, these being the amateur operator's certificate of proficiency (AOCPP) or 'full ticket' as it is known, and the limited amateur certificate of proficiency (AOLCP) or 'limited license'.

WARNING Operation of ANY radio transmitter without the appropriate license is ILLEGAL and the penalties are quite severe. This includes the hand-held walkie-talkies on 27MHz. DON'T be misled by glib sales talk.

AMATEUR ACTIVITIES

HF BANDS These bands are primarily used for contacting other amateurs interstate or overseas. Contact with far-away and exotic places, anywhere from Antarctica to Zanzibar, holds an irresistible appeal for some and 'chasing DX' constitutes their main activity. Still others prefer slaving all day over a hot soldering iron until a circuit works to their satisfaction, only to pull it apart to try something else! Many active on the HF Bands like talking to old friends, both interstate and overseas and keep regular schedules ('Skeds') on a net (prearranged frequency). Others like to investigate antennas, constructing enormous beams to improve their signal at distant places, those with the available space go so far as to construct an 'antenna farm'. Special types of transmission are becoming more popular on the HF Bands, particularly RTTY (radioteletype) and slow-scan TV (SSTV).

There are two principal modes of communication on the HF Bands. These are CW or more properly via Morse code. The other is 'single sideband' (or SSB as it is called) where the operator's voice is converted to electromagnetic energy (or radio wave) and transmitted; in this case no carrier wave is transmitted. On an ordinary short wave receiver not equipped to receive SSB it sounds much like very distorted speech. To detect it the carrier wave is 'reinserted' at the receiver.

VHF BANDS The two VHF bands of 52 to 54MHz & 144 to 148MHz are generally referred to as 'six' and 'two' metres respectively. These names being derived from the approximate wavelengths of the two bands.

SIX METRES (52 - 54MHz). Operation on this band is mainly divided into two types. 'Tuneable' and 'net' operation. Tuneable operation is principally in the segment 52.000MHz to 52.500MHz and the two popular transmission modes are SSB and AM. SSB is now by far the popular mode, over 80% of the persons active on this band using it. When extremely favourable ionospheric conditions exist contact with New Zealand, as well as interstate stations, are possible. Across-the-town working is also a large part of activities on the tuneable segment.

Net frequency operation involves working on an agreed-upon common frequency employing a common transmission mode, usually AM or FM.

TWO METRES (144 - 148MHz). As on six metres, activity on this band is mainly divided into tuneable and net operation. Tuneable operation takes place mainly over the first 1MHz of the band viz: 144 - 145 MHz. SSB and AM are the main transmission modes on the tuneable segment, but, unlike six metres, AM still predominates. SSB is coming into increasing use, particularly as it gives advantages in long distance working.

Net frequency operation on two metres all employ FM transmissions. To assist mobile operations, repeaters are installed at favourable locations at various centres around Australia. These repeaters receive transmissions on one frequency and retransmit it on another frequency. Being located in a generally high and favourable place means that the repeater can effectively increase the range of mobile stations, or stations located in awkward places.

UHF & SHF BANDS Activity on these bands is mainly confined to experimental transmissions and experimenting with various techniques. On the 420 to 450 MHz band most activity is tuneable-type operation. This is a popular band for 'moonbounce' experiments. Television is also a popular mode amongst a stalwart group and most of this activity is between 420 and 430 MHz. Both Monochrome and colour transmissions are in use.

VHF BEACONS

Beacons are fixed frequency transmitters that provide a constant signal for the purpose of indicating improving, or existing, anomalous propagation conditions that assist long distance working on the VHF bands. They also provide a constant signal that can be used for research into various propagation modes and mechanisms. At the time of writing (August 1973) there were 16 beacons operating in Australia and its territories. Another four or five were in various stages of completion or planning.

The list below gives call signs and frequencies of the currently operating beacons.

ANTARCTICA			WESTERN AUSTRALIA	
VK0W1, Macquarie Is	52.160MHz		VK6RTV, Bickley	52.006MHz
VK0GR, Casey	53.200MHz		VK6RTV, Bickley	145.000MHz
VK0MA, Mawson	53.100MHz		VK6RTW, Albany	52.950MHz
			VK6RTW, Albany	144.500MHz
NEW SOUTH WALES			VK6RTT, Carnarvon	52.900MHz
VK2W1, Dural	52.450MHz			
VICTORIA			TASMANIA	
VK3RTG, Vermont	144.700MHz		VK7VF, Devonport	144.900MHz
QUEENSLAND			NORTHERN TERRITORY	
VK4W1/1, Mt. Mowbray	144.400MHz		VK8VF, Darwin	52.200MHz
VK4W1/2, Townsville	52.600MHz			
SOUTH AUSTRALIA				
VK5VF, Mt. Lofty	53.000MHz			
VK5VF, Mt. Lofty	144.800MHz			

VHF NETS AND REPEATERS

SIX METRE NETS

52.525MHz FM National prime channel	53.032MHz & AM Used extensively in Vic., Qld, Tas.
52.650MHz FM Prime channel in W.A. and national secondary channel	53.035MHz
52.700MHz FM N.S.W. central coast channel and in scattered use elsewhere.	53.100MHz AM Local net in S.A.
52.950MHz FM 'in scattered use	53.866MHz AM Local net in Sydney and in scattered use elsewhere
	53.982MHz AM Local net in Wollongong

TWO METRE NETS

146MHz FM National simplex channel
145.850MHz FM Secondary channel: in widespread use
146.150MHz FM Secondary channel: in widespread use
146.600MHz FM RTTY channel

REPEATERS (The frequencies of the two metre nets and repeaters is at present under review and may change in 1974 or earlier).

1. Mobile transmit frequency 146.1MHz, receive frequency 145.6MHz this is referred to as channel 1 repeater. Channel 1 repeaters are operational in Gosford & Wollongong N.S.W.; Melbourne in Victoria and Mt. Tamborine on the Gold Coast in QLD, as well as Perth W.A.
4. Mobile transmit frequency 146.4MHz, receive frequency 145.9MHz this is referred to as channel 4 repeater. Channel 4 repeaters are operational in Sydney & Newcastle N.S.W.; Geelong & Gippsland (Mt. Bess) Victoria; Mount Cootha in Brisbane, Crafers in Adelaide and Mount Barrow in Northern Tasmania.

AMATEUR SATELLITES

Traditionally, amateur satellites are called OSCAR from the title Orbital Satellite Carrying Amateur Radio. To date there have been six in the series, several having established some firsts in the space communications field. Oscar 3, launched on 9th March 1965 was THE WORLD'S FIRST FREE-ACCESS COMMUNICATIONS SATELLITE. Nearly 100 amateurs in 16 countries, including Australia, succeeded in communicating through the satellite. Oscar 6 is currently in orbit and carries a translator that receives ground signals on a frequency band between 145.9 and 146.0MHz and retransmits them on a band from 29.45MHz to 29.55MHz. This very successful satellite was launched on December 1972 and has a planned life of about 12 months. It looks like exceeding that. Oscar 7 may be launched late in 1973 or early in 1974. Further details from the Wireless Institute or 6UP Magazine.

WIRELESS INSTITUTE DIVISIONAL ADDRESSES

AUSTRALIAN CAPITAL TERRITORY	SOUTH AUSTRALIA
P.O. Box 1173	G.P.O. Box 1234K
CANBERRA CITY. A.C.T. 2601	ADELAIDE S.A. 5001
NEW SOUTH WALES	WESTERN AUSTRALIA
14 Atchison Street,	G.P.O. Box N1002
CROWS NEST. N.S.W. 2065	PERTH. W.A. 6001
phone 43-5795	
VICTORIA	TASMANIA
P.O. Box 36	G.P.O. Box 869J
EAST MELBOURNE. VIC. 3002	HOBART TAS. 7001
phone 41-3535	FEDERAL EXECUTIVE W.I.A.
	P.O. Box 150
QUEENSLAND	TOORAK VIC. 3142
G.P.O. Box 638	
BRISBANE QLD 4001	
phone 48-6142 (STD 072)	

MAGAZINES

Amateur Radio - published by the W.I.A. and available to members on subscription included in their membership fee. Contains technical and constructional articles and news of Institute doings and events. Various groups attached to the W.I.A. publish their own magazines, some being of an extremely high standard.

The Australian EEB - published as a labour of love by Leo Gunther VK7RG. Contains a broad variety of articles from amateur radio to homebrew beer! Very readable and informative, it comes out about four times a year. Informal style - almost conversational.

Subscriptions: \$1.55/year to R.A. Walton
115 Wilmot Street
HUONVILLE TASMANIA 7109

6UP Magazine - published monthly by Amateur Communications Advancements an independent organisation. Contains technical and constructional articles with the emphasis on practicality, as well as news and the most comprehensive data service for the amateur ever published in Australia. 6UP also sells kits of some of the projects featured in their magazine.

Subscriptions: \$3.00/year to The Editor 6UP
47 Ballist Point Road
BIRCHGROVE N.S.W. 2041

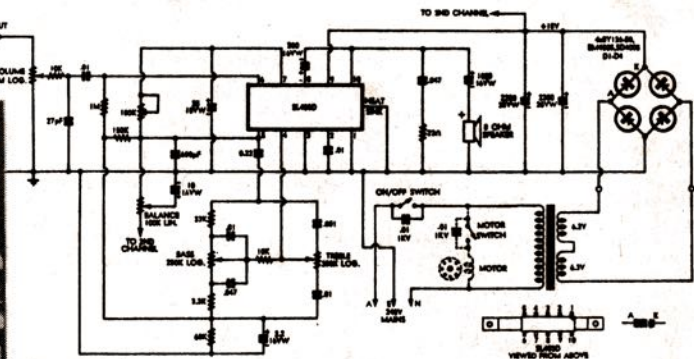
PLESSEY stereo amplifier kit

For the Hi-Fi enthusiast who wants to build a high quality 3W per channel amplifier. We have built one and compared it with a much more expensive 10W, 0.1% distortion job and found it better. A really economical way to build. Uses the SL403D integrated circuit. Very detailed instructions including speaker cabinet design and setting up procedures.

SPECIFICATION

Output power (Vcc 18V, Load 7.5 ohm)	3W rms per channel
Input sensitivity (for 3W output)	25mV rms
Input impedance	20Mohm
Frequency response (-3db at 100mW)	20Hz to 30kHz
Total Harmonic Distortion (at 1W)	0.3%
Current consumption at full output	680mA (both channels)
Noise level (ref 3W)	-75db
Tone controls Bass @ 50Hz	-14to +12db
Treble @ 10kHz	-12 to +12db
Dimensions	142 x 170 x 48mm
Weight	400gm

Mains transformer extra



Recommended transformer

240V/12.6V @1-2A (P&P 75c)

Plessey 3 + 3 Amplifier Kit

\$27.50 (P & P .50c)

Suitable Transformer

\$ 4.75

Playmaster 136 Metalwork

\$ 8.00 (P & P .50c)

(Can easily be adapted for Plessey Amp.)

Front Panel to Suit

\$ 3.50 (P & P .50c)

EXPERIMENTERS' KITS



EDUCATIONAL KITS

"Science Fair" Educational Kits for the student, hobbyist, or the entire family, - ideal gifts. All kits feature full instructions, fully re-usable components, are absolutely safe and no technical knowledge or soldering is necessary.

CRYSTAL RADIO KIT. This easy to build radio uses the same circuitry developed by Marconi for the first radio transmissions... an ideal introduction to basic radio theory for tomorrow's engineers. It will receive all local radio stations, no battery is required and it takes only an hour to build. Dimensions 11" x 8" x 1 1/2"

\$4.95 P&P 30¢



10 IN 1 ELECTRONIC PROJECT KIT

The ten interesting circuits in this kit are designed to teach basic principles with basic electronic circuits that actually work. As an added feature there is a solar cell included in the kit which can be substituted for the 1.5 volt battery for many of the circuits. Projects are as follows:- 1. Germanium Radio, 2. Germanium Radio with transistor, 3. Transistor radio, 4. Transistor amplifier, 5. Broadcast station, 6. Signal generator, 7. Code practice oscillator, 8. Code practice oscillator for two, 9. Signal tracer, 10. L.F. oscillator. Supplied complete with manual. Dimensions 15" x 10 1/2" x 2".

\$8.95 P&P 50¢

Battery required 1 x 1.5 Volt

.14¢



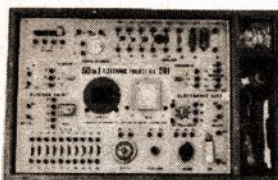
I.C. 20 IN 1 KIT WITH INTEGRATED CIRCUIT

This kit features an enlarged visualised integrated circuit (I.C.) which clearly shows the placement of a condenser, two resistors, transistor and diode in an I.C. Projects include a radio "electronic Cat", I.C. radio, water tester, photo burglar detector, solar battery radio, "Sound of Machine Gun", burglar detector, I.C. telephone and many others. Supplied complete with circuit cards. Dimensions 15" x 9" x 1 1/2"

\$13.25 P&P 75¢

Battery required 1 x 9 Volt

.60¢



50 IN 1 "SOLAR ENERGY KIT"

With no special instructions you will be able to construct the 50 simple but interesting circuits described and design as many more as your imagination and ingenuity can produce. The 50 circuits described represent a variety of circuit types including: communication circuits, test circuits, control circuits, indicator and alarm circuit and all are designed to teach basic electronic principles. Many of the circuits feature the solar battery (it converts the energy of the sun's rays into electricity). The kit contains a generous assortment of simple, but advanced design components like those used in space age electronic systems of high complexity. The parts supplied together with the convenient kit for constant experimenting. Parts include a relay, earphone, speaker, meter, transformer, 58 page instruction manual and hardwood case. Dimensions 17 1/2" x 11" x 2"

\$21.95 P&P \$1.00

Batteries required 1 x 9 Volt
2 x 1.5 Volt

.60¢
14¢ ea.

150 IN 1 EXPERIMENTER'S KIT - THE ULTIMATE

A magnificent educational kit for both the inexperienced and advanced experimenter. Beautifully detailed manual describes in step by step instruction how to make up to 150 different electronic projects. No soldering is required and the complete kit operates off harmless low voltage battery power. An enlarged transparent I.C. (integrated circuit) clearly shows the electronic layout of these most complex space age devices. As no soldering is required (connections are by spring terminals) all components can be re-used time and time again. The kit includes the following electronic devices: Cadmium sulphide cell, solar cell, micro-ammeter, radio tuner, potentiometer, relay, I.C., speaker, signal light, microphone, earpiece, Morse key, slide switch, transformer etc. The separate projects are too numerous to list however, it has been said that the only thing that cannot be made is a television set! Supplied in a sturdy compact wooden case. Dimensions 16" x 8 1/2" x 3 1/2".

\$35.95 P&P \$2.00

Batteries required 1 x 9 Volt
2 x 1.5 Volt

.60¢
14¢ ea.

KITS

For "Electronics Australia" and "Electronics Today" Projects. As we guarantee brand new, factory fresh components in our kits please allow 3 to 7 days for despatch (we have heard of kits assembled in quantity remaining on suppliers' shelves for up to 12 months!) P&P 75c per kit.

Listed below is an example of our range - please do not hesitate to contact us for further prices on any kits.

Playmaster 131 Tuner	E.A. February 1971	\$23.50
Audio Frequency Oscillator	E.A. June 1970	\$14.50
S.C.R. Speed Controller	E.A. May 1971	\$13.50
Signal Generator	E.T. June 1971	\$24.50
Transistor Tester	E.A. August 1971	\$14.50
Magnetic Pre-amp	E.A. September 1971	\$12.50
Microphone Pre-amp	E.A. March 1972	\$4.00
"Audiometer"	E.A. March 1972	\$27.50
L.E.D. Indicator	E.A. March 1972	\$3.10
I.C. Power Supply	E.A. June 1972	\$29.90
Reverb Unit	E.A. March 1972	\$36.00
One Transistor Radio	E.T. December 1971	\$7.90
Tape/Slide Sync.	E.T. April 1972	\$24.69
Sound Operated Flash	E.T. May 1972	\$19.00
Super Stereo	E.T. May 1972	\$19.00
Counter	E.T. September 1972	\$79.00
6 Metre Converter	E.A. August 1972	+ Readout \$14.50
I.C. Probe	E.A. October 1972	+ Ital. \$9.50
Fluro Light	E.T. November 1972	\$14.50
I.C. Power Supply	E.T. November 1972	+ Hams \$20.00
Stereo 24 Adapter	E.A. November 1972	\$5.75
FET 4 Input Mixer	E.T. September 1972	\$24.50
Playmaster 138	E.A. December 1972	\$68.00
Signal Injector	E.A. June 1973	\$6.25
VHF Converter	E.A. August 1973	\$21.50
FET 4 Input Mixer	E.T. September 1972	+ Metal Work \$24.50

METALWORK AND PANELS (all P&P 50c)

Transistor Tester	E.A. August 1971	\$2.80
Musicolour MK II	E.A. December 1971	
	(Metalwork)	5.90
Engraved Panel	E.T. September 1971	2.12
4 Channel Mixer	E.A. June 1972 (inc. Engraved Panel)	4.50
I.C. Power Supply	E.T. April 1972	13.00
Tape Slide Sync.	E.T. September 1972 (inc. Engraved Panel)	4.50
Counter		9.70
100 watt Guitar amp including heatsinks		\$14.50
100 watt Guitar pre-drilled heatsinks (PAJR)		\$3.00
106A00 Digital trainer metalwork		\$6.90
Digital trainer panel (brushed aluminium)		\$6.90
Playmaster 136 including cover and heatsinks		\$8.00
Playmaster 136 exclusive brushed panel		\$3.50
Playmaster 136 standard panel		\$2.50

DON'T FORGET TO USE OUR ORDER FORM

DICK SMITH SUPERKITS These kits have been specially selected for the VIP treatment. Everyone has been built and exhaustively tested by one of our staff members and his comments and suggestions are included with the kit (it often makes the difference between the thing working or not!) They are usually on display at the centre for you to do your own evaluation before buying.

- Most have flow-soldered pre-tinned circuit boards
- Copies of construction articles are included plus helpful notes (see above)
- We monitor the magazines for 'up-date' articles and previous errors. Your instructions will be bang up to date.
- We include little extras that give the kit the final touch. Often the reliability can be improved by using slightly better components. Or we can include something that you might not be able to get yourself to give a super finish.

PLAYMASTER 136 SUPERKIT (Electronics Australia Dec. 72) Build yourself this fantastic quality amplifier at less than half the cost of comparable commercial units. See the published curves which conclusively prove the fidelity of the amplifier.

We include as part of our 'Superkit' policy an expensive looking brushed aluminium panel. This is similar to the finish found on imported gear costing around \$300 plus. Most people are impressed by the looks more than the sound, so this way you can doubly impress them. The boards being pre-tinned virtually eliminate the possibility of dry joints and we also include some silicon grease to mount the transistors and improve heat dissipation.

This kit is for the enthusiast who appreciates the worth of spending a little more on a kit to get a better article.

136 Less Fairchild special offer transistors \$55.60
136 Inc Transistors \$65.00
(P & P \$1.00)

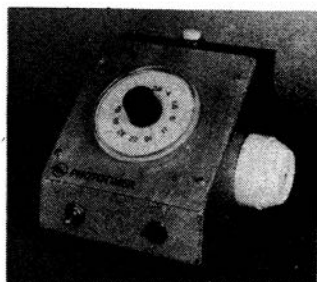


100W AMPLIFIER (Electronics Today Dec '72) Our first prototype was so successful that we built another to try and fault the construction. We couldn't and the results were breathtaking. We used a couple of Rola 12U50 speakers, and the sound was loud and clear over 1 mile away. Don't forget we are not impressing you with figures, the 100W is 'rms' not the often quoted 'peak'.

Demand for this kit continues and our supply of STC die-cast boxes (for the Super treatment) may not last so be early! Pretinned boards of course and the heatsink is pre-punched to save you effort. We also simplified construction a little on the second prototype (details in the notes with the kit). Also a can of heat dissipating paint and some silicon grease to improve thermal conductivity.

Complete kit \$65.00 (P & P \$1.50)

PRE-AMP FOR THE ETI 100 WATT AMPLIFIER To compliment the above kit we have produced a very economical pre-amp. It offers two sensitivities and will handle mics and guitars. It also offers Volume Treble and Bass control. Since most people build it into something else we do not include a case. Comes complete with pre-tinned board, circuit diagram etc. \$9.50 (P & P 50c)

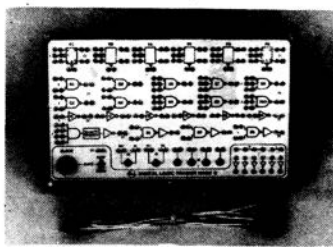
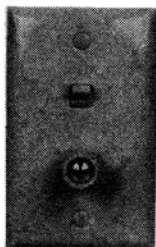


SOLID STATE PHOTOGRAPHIC TIMER (Electronics Australia May '73) Just the thing you photographers have been looking for. Uses the very popular Signetics 555 timer IC for timing between 2.8 and 90 seconds. Can be used in any application switching 240V and up to 300W. Our kit is for the safer transformer version and is complete right down to a plastic case.

\$22.50 (P & P \$1.00)

VARILIGHT (UP TO 1000 WATT) Only sold to single blokes or married men over 21. Allows you to turn the lights down low, so you are not completely in the dark! Kit includes BA triac, diac and all the other components needed. We include a posh 'Clipsal' flush mounting plate. All you need is a piece of tin to mount everything on. \$6.90 (P & P 50c)

SPECIAL 'SHORT-FORM' KIT contains only the electronic parts, so you can build it how you like. \$4.90 (P & P 30c)



DIGITAL LOGIC TRAINER (Electronics Australia March '73) The best possible way to learn all about the subject is to actually do it and you'll be amazed what can be done with this kit. We have sold many to schools, technical colleges etc. Contains 6 JK flip flops; 4, 2-input gates; 6, 3-input gates; 6 inverters; 3, 2-input buffers and a 4-input Schmitt trigger. These are supplemented by a dual range clock generator, two bi-polar push buttons with bounce suppression, four level setting switches and 6 LED readout indicators. Our kit uses only the best components as described in the articles and has a tremendous-looking silk screened panel. An excellent piece of educational equipment, yet will give hours of fun. \$82.00 (P & P \$1.00)

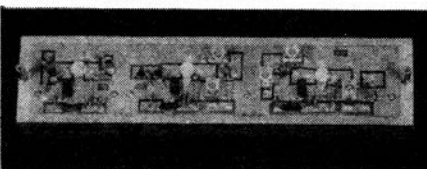
'MUSICOLOUR' AUDIO COLOUR ORGAN (Electronics Australia December, 1972)

Watch red, blue and green colour dance to the best of your favourite music. You can make an entertaining display of multicolour light patterns with this unit. You command three independent bands of audio frequencies to modulate three discrete strings or groupings of any colour lamps. Just connect your hi fi speaker, power amplifier, radio, recorder, record player etc. to the unit and then plug each colour lamp (reflector lamps are ideal) into each channel (up to 1000 watts per channel). Complete kit including attractive anodised front panel, all components and explicit instructions.



\$52.00 (P&P \$1.00)

DICK SMITH DECISION MAKER (See Review in Electronics Australia June '73) A circuit specially developed by the staff to help 'Him' make up his mind. Very humorous - a small box has two light emitting diodes and a push button. You simply press the button and the lights flash. They stop flashing and one lights on the decision 'Yes' or 'No'. It may sound ridiculous but it certainly has people talking and wanting to try it out (We have had some very successful executives in to buy them, most have since gone broke though! This kit is complete with 3 transistors, LEDs, solid state diode switching, and a very handsome silver label with jingle. Full instructions and circuit. ONLY available from us. \$8.75 Plus battery if required 60c.



30WATT R.F. AMPLIFIER KIT This one is specially included for our many ham customers. It uses the Solid State Scientific transistors described in the catalogue. They are virtually indestructible, withstanding severe VSWR and are guaranteed to give in excess of 30W at 144MHz on a 12.6V supply - come on you mobiles - and even more on 13.8. As used by leading VHF mobile radio manufacturers. We've made the kit in three stages with a discount for the complete job. Full instructions are included. We supply the power transistors, circuit boards, special trimmers etc. as follows:

7W stage using the 2N5589 - complete kit	\$11.50 (All P&P 50c)
P.C. Board only	1.50
15W stage with 2N5590 - complete kit	13.50
P.C. Board only	1.50
30W stage including 2N5591 - complete kit	17.50
P.C. Board only	1.50

COMPLETE KIT to build R.F. power amplifier - 300mW in, 30W out

\$37.50 (saving you \$5.00)

C.D.I. KIT (Electronics Australia - August 1970)

This capacitor discharge electronic ignition unit will improve the performance of any engine to a great extent. It can easily be connected (uses existing ignition coil) and it can be moved from one car to another without difficulty. The kit is supplied with a heavy duty die-cast box, transformer secondary is pre-wound to make construction quicker. Will operate in any 12 volt positive or negative earth vehicle or boat.

\$21.50 (P&P 50c)

MOTOR SPEED CONTROLLER

Build yourself a motor speed controller for Electric Drills, Bench Motors etc. 750 watt rating.

KIT DSE-11 includes 10 amp S.C.R. diodes, all electronic parts and simple circuit. \$5.75

KIT DSE-12 includes above also case, 3 pin plug and socket, and all necessary hardware to make complete controller. \$9.25

PRINTED CIRCUIT BOARDS

Board	Project	Price		
69/P9	Playmaster 127	3.05	ET021	Spring Reverb 1.50
70/A1	Playmaster 128	1.89	ET023	Photographic Timer 1.50
68/A8	3 + 3	1.95	ET025	Super Stereo 1.90
68/A8	Powered Loudspeaker	1.50	ET026	Tape Slide Sync. 1.50
69/P5	Playmaster 125	2.91	ET029	Tuner 1.45
70/P1	Volume Compressor	1.53		IC Power Supply 2.50
70/CD1	Capacitor Discharge Ign.	1.20	ET033	Int. audio system 2.60
70/BF08	B.F.O.	1.20	ET034	Int. audio system 2.60
70/G7	Alignment Oscillator	1.23	ET111	Power Supply 1.50
TAA300	I.C. Board	1.30	ET034A	TA25C I.C. \$2.65
70/A2	Playmaster 129	3.60	ET1413	100W Guitar Amp 2.20
71/TU2	Playmaster 131	1.25	ET1416	International Amplifier 3.40
71/HP1	Headphone Amplifier	3.40	ET1521	Digital Clock 2.99
71/Sa4A	Playmaster 132	1.25		
71/Sa4b	Playmaster 132	1.25		
71/Sa4c	Playmaster 132	3.20		
71/P8	Magnetic Preamplifier	2.20	RF5	2 Metre Amp \$1.50
71/A8	Intercom Unit	1.50	RF15	2 Metre Amp 1.50
71/C12	Musicolor Mark 2	3.00	RF30	2 Metre Amp 1.50
72/SA1	Economical Amplifier	3.00	RF30C	Set of three Combined 4.20
72/R2	Crystal Locked Receiver	1.60	7211T	Playmaster 138 2.75
72/P3	Microphone Pre-Amp	.90	72S11	Four Channel Converter 1.50
72/T3	EA130 Tuneable I.F.	3.20	72SA10	Playmaster 136 Pre Amp 1.90
72/PS6	Reg. power supply	.98	73T1	Digital Logic Trainer 2.40
72/C2	Sync. & pattern gen.	4.75	733C	Converter 1.80
72/A6	P.A. Amp	1.50	73D1	I.C. Board Set of three 1.50
72/MX8	P.A. Amp	2.70	73TV7	Homodyne Tuner 1.80
72/P2	Mic. preamp.	1.60		
72/IF6		.75		
72/C8	6 Metre Converter	1.30		
72/G7	Guitar Amp.	1.50		
72/SA9	Amplifier	1.50		
72/S10	Scaler	1.60		
72/I0	IC Probe	.95		
ET/003	Burglar Alarm	1.50		
ET/004	Variwiper	1.00		
ET/005a	4 Channel Mixer	1.50		
ET/006	Audio Signal Generator	1.60		
ET/018	Woofers Amp	1.80		
ET/019	Car Burglar Alarm	1.50		
ET/022	V.T.V.M.	1.50		



Australian Distributor: EMI



VEROBOARD is a high grade laminated circuit board with copper strips bonded on and pierced by a matrix of holes. It is ideal for prototype lash-ups and production use. Available in 3 pitches.

SPECIFICATION

Mechanical construction: SRBP board to BS 3888

Electrical	0.1	0.15	0.2
Max breakdown voltage (kv)	1.2	2.5	4.0
Recommended working voltage (V)	100	200	350
Insulation resistance	All 10 ¹¹ ohms		
Resistance of copper strip (x10 ⁻³ ohm)	10	7.1	7.0
Capacitance at 1.5MHz (pF/in)	1.3	0.95	0.75
Max working temperature	All 97°C		

DESIGN METHOD

Circuit assembly with Vero-board requires the interconnection of copper strips by components. The components should be arranged to follow the required circuit, the copper strips being broken where necessary either by using a Spot Face Cutter (Part No. 2022) or by drilling, in which case a number of boards can be stacked and drilled at the same time.

CIRCUIT DESIGN PROCEDURE

In order to assist users to lay out and assemble circuits on Vero-board, a number of specially designed accessories have been produced.

We suggest the following working methods:

1. From the appropriate design sheet, obtain a number of prints. It will be seen that a Design Sheet consists of two diagrammatic drawings of a piece of Vero-board - one marked plain side, the other copper side. On both of these the holes are indicated by dots and each row of holes is numbered or lettered so that at a later stage speedy reference to a hole may be made.

2. On the top drawing of the print, representing the plain side of the

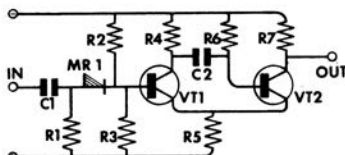
Vero-board, proceed to lay out the circuit required. Bear in mind the physical size of components to be used and the minimum number of holes they will span. A simple example is shown below, which illustrates the general principles, although of course in practice much higher component densities may be obtained.

Where a wide Vero-board such as a 24-strip or 32-strip is being used, a central copper strip may be used as an H.T. rail and the two outer strips as ground rails. The circuit is laid out between H.T. and the other Earth rail.

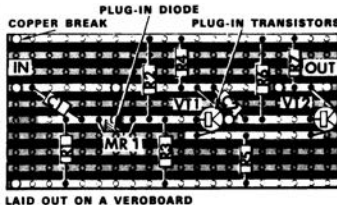
3. While laying out the circuit, mark on the lower drawing (representing the copper side of Vero-board) the positions where copper breaks are required.

It can frequently be arranged that the holes drilled to break the copper strips can be utilised to take a transistor holder.

4. When the circuit has been proved, a final component layout is drawn on a Design Sheet, from which production prints may be obtained. For production runs, silk screen printing of component positions is recommended. Quotations will gladly be supplied on request.



A SIMPLE CIRCUIT



0.1" PITCH

3.75" wide x 3.12" long	1 - 9	10 up
3.75" wide x 8.12" long	.85c	.75c
3.75" wide x 17.9" long (122)	2.20	1.90
16 way edge sockets to suit 0.1" pitch	3.30	2.90
	.96c	.86c

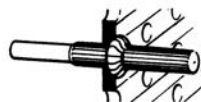
0.15" PITCH

3.75" wide x 3" long	1 - 9	10 up
3.75" wide x 8" long	.75c	.60c
3.75" wide x 17" long (44/1505)	1.55	1.40
2.5" wide x 17" long (41/1501)	2.80	2.50
16 way edge sockets to suit 0.15" pitch	2.10	1.90
	1.00	.90c

0.2" PITCH

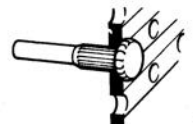
3.4" wide x 17.9" long (2/7003)	1 - 9	10 up
	2.80	2.50

PINS



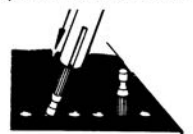
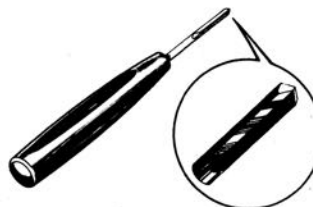
TP2142 (for 0.1" pitch)

2c each or \$1.60 per 100

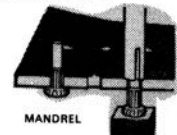


TP2141 (for 0.15" pitch)

SPOT FACE CUTTER to remove copper quickly and neatly from board (2022) \$1.60



INSERTION METHOD



MANDREL

MATRIX BOARD

Standard .25" pitch (4 holes per inch)

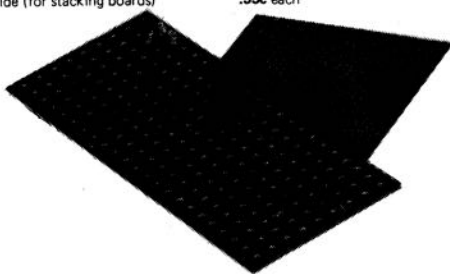
260	6 holes x 6"	1 - 9	10 up
270	9 holes x 6"	\$0.45c	\$0.40c
289	12 holes x 12"	.65c	.60c
292	18 holes x 6"	1.50	1.45
296	24 holes x 3"	1.25	1.10
		.80c	.70c

.25" Accessories

250 Pin
280 Eyelet
253 Wedge Pin
170 Guide (for stacking boards)

26 each or \$ 1.40 packet of 100
16 each or 5.75 packet of 1000
26 each or 19.00 packet of 1000

.55c each



Miniature .1" pitch (10 holes per inch)

303	3" x 3"	1 - 9	10 up
304	6" x 6"	\$0.66c	\$0.60c
302	12" x 12"	1.80	1.60
		6.30	5.70

.1" Accessories

314 Turret pin
285 Eyelet with 1" tag
313 Tool (for inserting pins)

26 each or \$8.80 packet of 1000
26 each or 1.60 packet of 100
\$2.30 each

Marketed by—

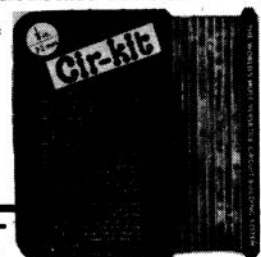
**ZEPHYR PRODUCTS
PTY. LTD.**



CIR-KIT

The world's most versatile circuit building system, cir-kit is a thin copper tape with an adhesive surface which is designed for prototype wiring on circuit boards. Cir-kit can be bent or curved to whatever form you require and used on either or both sides of the board. It may be soldered.

5 ft. card 1/8" wide \$0.60c



PRINTED CIRCUIT BOARDS

Pre-cut high quality P.C. board with permanently bonded copper on one side - available in bakelite or heavy duty fibreglass.

6" x 3"	1-5	6 up
12" x 3"	.38c	.30c
12" x 12"	.80c	.75c
6" x 3" Fibreglass H.D.	\$1.90	\$1.75
6" x 6" Fibreglass H.D.	.80c	
12" x 12" Fibreglass H.D.	1.52	
	4.00	

ETCHING KIT

Manufacture your own printed circuit boards with this complete kit. Contains full instructions, bituminous paint, ferric chloride, resin, brush and a printed circuit board for practice!

4 oz. Jar Ferric Chloride
Tube Bituminous resist paint

\$2.40 P&P 50c
.80c
.40c

SWITCHES PANEL MOUNTING

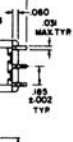
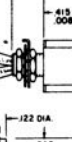
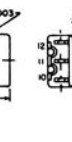
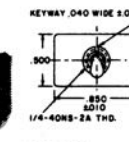
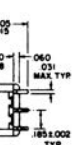
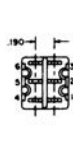
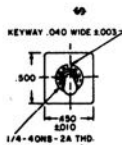
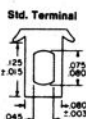
Two things to check — the number of contacts or poles ('ways' on a rotary switch) and its mode or throw. e.g. SPST stands for single pole single throw. 3PDT for triple pole double throw. Other points to remember 'NO' normally open contact, 'NC' normally closed which relate to push-button or spring loaded switches. Sometimes you may be supplied with a DPST instead of SPDT for example — it doesn't matter just ignore the contacts you do not need. On rotary switches also check whether you need "break before make" or "make before break" (the latter for example would be used to switch loudspeakers on an amplifier if you must not open circuit it).



MINIATURE RANGE

American C&K brand miniature switches, not cheap but definitely worth the cost. All contacts rated at 240 Volt A.C., 2 amp, require 1/4" mounting hole.

Type No.	Contacts	Rating	1-9	10 up
7201	D.P.D.T.	2A		
		One of our most popular switches, available in chrome, red or white toggle	1.35	1.25
7401	4.P.D.T.	2A		
		As above, four poles	2.70	2.50
7203	D.P.D.T.	2A		
		As for 7201 but with centre off position	1.76	1.60
7207	D.P.D.T.	2A		
		Centre off and with one position spring return to the centre	1.76	1.60
P8221	D.P.D.T.	2A		
		Miniature high quality push button switch, momentary action	2.20	2.00



GENERAL SPECIFICATIONS

Contact Ratings: Gold contact surfaces on copper alloy terminals (epoxy sealed terminals are standard). 1/2 ampere resistive load @ 240 VAC — 28 VDC. Designed for use in dry (very low energy) circuits.
Insulation Resistance: 1000 megohms minimum.
Dielectric Strength: 1000 volts rms at sea level.
Electric Life: 60,000 cycles minimum at full load.
Mechanical Life: 100,000 make-and-break cycles minimum.
Max. Allowable Force on Plunger: 10 lb.

MATERIALS AND FINISHES

Plunger: Nylon plunger and cap.
Mounting Bushing: Cadmium w/clear chromate over brass. High torque to withstand 12 in.-lbs. with no distortion or loosening of parts.
Housing: Stainless Steel.
Case Material: General purpose phenolic or melamine.
Standard Hardware Supplied: 2 Hex mounting nuts 1 Internal lockwasher 1 Locking ring.

STANDARD RANGE

Type No.	Contacts	Rating	1-9	10 up
SA110	S.P.S.T.	1 1/2A		
		An ideal general purpose toggle switch, features attractive chrome toggle mounting hole 1/4" 49¢	45¢	
S116	D.P.D.T.	5A		
		Toggle switch — ideal for mains switching, 1/2" mounting hole	1.10	1.00
SA220	D.P.D.T.	3A		
		Toggle Switch, inexpensive	69¢	60¢
SA	S.P.S.T.	3A		
		Pushbutton with 240 volt rated contacts normally open, (push on), momentary action	69¢	60¢
SB	S.P.S.T.	3A		
		As above, but normally closed (push off)	69¢	60¢
SW3116	D.P.D.T.	2A		
		Modern rocker switch, white, requires 7/8" x 7/16" mounting hole	86¢	80¢



ROTARY SWITCHES

High quality M.S.P. switches, 1/4" shaft, overall diameter 1 1/4".

Poles	Positions	Sections	Price
1	11	1	\$1.70
1	11	2	2.74
1	11	3	3.90
2	4	1	1.60
2	4	2	2.65
2	4	3	3.70
2	5	1	1.60
2	5	2	2.75
2	5	3	3.75
3	3	1	1.60
3	3	2	2.70
3	3	3	3.80
3	4	1	2.25
3	4	2	3.70
3	4	3	4.90
6	2	1	2.20
6	2	2	3.70
6	2	3	4.90



SLIDE SWITCHES

Type No.	Contacts	Rating	1-9	10 up
SW210	D.P.D.T.	—		
		A sub-miniature 2 position slider switch	\$0.35c	\$0.30c
SW146	5.P.3.T.	3A		
		A 3 position switch with five separate poles — ideal for audio switching, approx. 1 1/4" long	.85c	.75c



SWITCHES Jabel Switches, we tried to check the ratings, but found they handled car horns with no trouble at all. Plated contacts with unique spring-loaded wiper and large area contacts. Only 1 1/4" diameter. The following configurations cater for most needs and give you a few spare contacts possibly.



Poles	Position	Price
4	3	\$1.70
2	6	\$1.60
4	2	\$1.70
2	5	\$1.60
1	12	\$1.50

WATKIN WYNNE PTY. LTD.

FLEX—KEY ELASTOMER KEYBOARDS The DKB series of conductive elastomer keyboards are intended for data entry. Just the sort of thing for calculator enthusiasts. High reliability because they are totally enclosed in a carbon-silicone elastomer which is bonded to the printed circuit substrate. Moisture (coffee) proof. Uses gold-plated copper contact grids on glass-epoxy board. Pin terminals are swaged and soldered for long life. Legends are silk-screened on back of Mylar legend sheet. Directly compatible with DTL, TTL, MOS and CMOS logic. Contact bounce virtually eliminated by the elastomer properties. Both types have single pole momentary switches with one terminal common to all switches.

16DK1B \$16.90

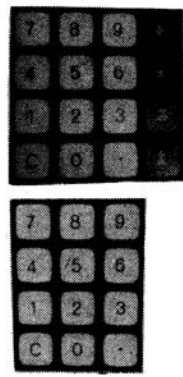
SPECIFICATION

Key travel: .005"
 Open Circuit Resistance: infinite
 Operating force: 3oz. nom.
 Contact resistance at 6 oz. force: 10 ohm
 Current rating: 25mA
 Voltage rating: 150V
 Switch power: 250mW max.
 Life: 20,000,000 operations into resistive load
 Current rise/fall time: 1 millisecond
 Operating Temperatures: -40°C to 60°C

Australian Distributor — General Electronic Services

12DK2B \$14.50

FLEX KEY Corporation



FUSES & FUSEHOLDERS

FUSES



1-9	10 up
3 AG style standard — pack of 5.	
Values below 1 amp	\$0.50 \$0.40
1 2 3 5 6 8 10 15 25 30 35 50 amp	.38 .25

FUSE HOLDERS



1-9	10 up
NCFH125F McMurdo chassis mounting (for 3AG fuse)	\$0.22 \$0.18
Sato type 4000 screw in type for panel mounting	.50¢ .40

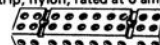
GROMMETS

Black Rubber H.D.

No.	Hole Size Required	Bore	1-99	Per 100
A1	5/16"	7/32"	.03¢	\$1.80
A8	3/8"	1/4"	.03¢	1.80
A5	1/2"	3/8"	.03¢	2.20
B15	Rubber mounting foot	1/8"	0.04¢	\$2.50

TERMINAL STRIPS

Mains connecting strip, nylon, rated at 6 amps at 240V A.C.
 12 way type Mc-1



GENERAL PURPOSE TERMINAL STRIPS

Screw connections — ideal for mounting on rear of units etc.

Type	Terminals	1-9	10 up
1722	2 Terminals	.15	.13
1723	3 Terminals	.25	.22
1724	4 Terminals	.30	.26
1725	5 Terminals	.40	.35

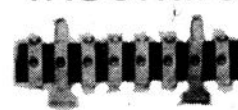
RESISTOR MOUNTING STRIPS



48 lugs per side 1 1/8" wide \$1.80
 As above, per lug \$0.05c

TAG STRIPS

Miniature bakelite tag strips, fully tinned for easy soldering



Type A	3 lug with one securing lug	.07¢
Type B	5 lug with one securing lug	.11¢
Type C	10 lug with two securing lugs	.20¢

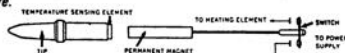
SOLDERING IRONS We recommend something between 10 and 30W for transistor circuitry and 30 to 50 watts for general use. Soldering guns are not really suitable for electronic circuits. Using an iron is easy if you follow the rules:

1. Use a good 60/40 rosin solder.
2. Clean the iron tip with a file so it is free from pitting.
3. Keep it clean by wiping the hot tip occasionally (and quickly) with a damp rag.
4. Make sure all parts are clean and shiny using sand paper or steel wool.
5. If possible twist or wrap wire to termination. A good mechanical connection helps.
6. Only use the iron to melt solder after you have cleaned it. Otherwise heat the joints with the iron until they are hot enough to melt the solder. Feed the solder until enough is applied. Then remove solder and iron and allow to cool.
7. Do not move anything while joint is cooling. If you do, reheat the joint again.
8. The joint should look shining, if it has a grey cracked look you have made a dry joint. Something wasn't clean or you did not heat the joint sufficiently.
9. Excessive heat will damage semiconductors so use a heatsink - either hold wire in pliers or use a clip and be quick.
10. If you are working on equipment that is earthed be careful not to damage semiconductors with an iron that is also earthed since small voltage differences can occur which will damage delicate components.

WELLER SOLDERING IRONS We stock three Weller irons, two for professional use and one intended for the hobbyist. The two professional irons use a unique constant temperature control principle.

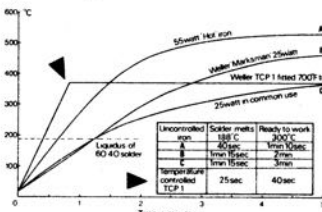
Known as the Curie point principle, it ensures that the iron is always at the correct temperature. Thus a more powerful element can be used without the iron overheating while it is idle. The iron therefore warms up from cold very rapidly reaching a stable operating temperature in well under a minute.

Using the Curie point principle and operating as described below, the tip temperature controls the iron. No matter how long a Weller iron has been idling, it is always ready for use at the chosen temperature.



Inside the iron a permanent magnet is attracted towards the temperature sensor when it is cold. This pulls the power switch on. The iron heats until the tip reaches its Curie point temperature when it is no longer able to hold the magnet which retracts, thereby switching the power off. As soon as the tip cools slightly the temperature sensor re-attracts the magnet and heating resumes. The only influence on the control is the tip temperature which therefore remains constant.

The graph below shows how successfully the principle works. The heating element is wound inside a hollow stainless steel tube to the insertion depth of the tip. Since stainless steel has a low thermal conductivity, heating is localised in the tip.



SCOPE soldering irons

The iron that only consumes current when it's on the job. Chosen by engineers, enthusiasts, servicemen etc. because it's quick, easy and safe to use. A unique feature is the easily replaceable carbon element. Faster heating too, 5-6 seconds from cold and then practically instantaneous. Does the job of 150 Watt irons (Miniscope upto 75W) yet operates from very safe 10W voltages. Temperature control at your finger tips and only the tip gets hot so no more insulation burning!



MINISCOPE A little beauty with finger tip control temperature switch. Press till temperature is right then by releasing periodically you can get the exact amount of heat you want. As the elements are so inexpensive you get two spares with each iron plus a spare bit. All parts are available. Comes in plastic gift pack and makes ideal gift. \$6.50 (P&P 50c)

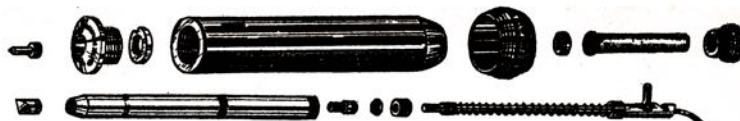
STANDARD SCOPE Again features the temperature switch, thumb operated this time. On the job in 5-6 seconds from cold. The carbon element enables the heat to be concentrated at the tip where it's needed. Ideal for bigger jobs. Two spare elements included plus spare tip. All parts very easily replaced. \$6.80 (P&P 50c)



DELUXE SCOPE features stainless steel barrel, two tone handle and comes in a plastic pouch gift pack. \$7.75 (P&P 50c)



The recommended Natronic transformer incorporates an electrostatic shield. Complete with stand it may be used for on or under bench mounting. \$8.25 (P&P \$1.00)



SCOPE SPARES

Copper Tips (Standard)	\$0.15	Push Rod Assembly	\$1.60
Copper Tips (Instrument)	.15	Return Spring	.20c
Barrel (Standard)	1.50	Flex Lead	2.00
Barrel (Stainless Steel)	2.25	Bakelite LockNut	.35c
Element (Carbon)	.15	Brass Nut	.45c
Bead Retaining Nut	.08	Handle Complete	3.20
Beads Ceramic	.08	Switch Ring	.45c

MINISCOPE SPARES

Copper Tips	\$0.15	Flex Lead	\$1.25
Barrel Stainless	1.65	Handle - Unslotted half	1.00
Elements	.15c	Handle Centre Piece (slotted)	.30c
Push Rod Assembly	1.40	Handle Brass Sleeve	1.00
Insulating Bush	.14c	Ceramic Bead	.08c
Switch Return Spring	.14c		
Contact Lug	.14c		
Switch Lever	1.00		



VIBROSCOPE Etches on any metal, ferrous or non-ferrous, hardened, annealed, dull, polished. It produces a good penetration for long lasting results. Operates on 2.5 to 6.3V AC or DC. Ideal transformer would be the one on your soldering iron. If you can handle a pencil you can use the Vibroscope, no skill required. Full instructions included. \$5.75 (P&P 50c)

IRH Components Pty. Limited

THE CRESCENT, KINGSGROVE, N.S.W. 2208. PHONE: 50-0111
74 RAGLAN ST., PRESTON, VIC. 3072. PHONE: 44-5021

THE COMPANY ENGINEER OF ALL INSTRUMENTS

ADCOLA SOLDERING IRONS

THERMATIC is the very latest temperature controlled iron. Uses the very latest solid-state temperature sensing in conjunction with an SCR type control circuit. A simple screwdriver adjustment in the handle enables you to set the exact soldering temperature you need for every job. Ideal therefore for any components or solders requiring accurate temperatures. Helps to eliminate damage to delicate components. A must for repetitive work ensuring consistent joints. Temperature range from 200 to 400°C without changing the tip. Universal application from ac mains 240V fitted with Armclad long-life tip.

	Iron	Tips	Spare Heaters
	T30	A30220	T30-1
	T50	A50225	T50-1
Price	\$18.50	\$1.10	\$16.50



DUOTEMP idles at the ideal temperature for printed circuit soldering. Operates direct from mains supply. This one has an ingenious power-booster button which provides additional heat for sustained work or heavy-duty soldering. Essential for really reliable repetitive work where drops in bit temperature can result in dry joints. Idles at 340°C with booster lifting temperature to 500°C. Only operates from 240V a.c. supply. Fitted with long-life Armclad bit. Very good value.



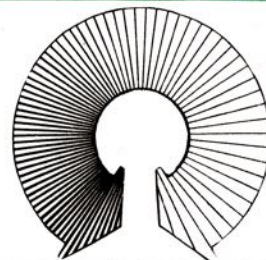
	Iron	Tips	Spare Heaters
	D30	A30220	D30-1
	D50	A50225	D50-1
Price	\$10.75	\$1.10	\$8.50

STANDARD is the iron for hobbyists. A very reliable proven iron which is ideal for occasional use. Operates at 370°C. Fitted with Triclad plated tip. Operates from 240V ac or dc.

Iron	Price	Tips	Price	Spare Heaters	Price
S30	\$7.50	T30220	\$0.50c	S30-1	\$5.00
S50	\$8.50	T50225	\$0.60c	S50-1	\$6.00
S65	\$9.50	T65165	\$0.70c	S65-1	\$7.00



solid state controlled temperature soldering systems



First in the World to offer Accurate Temperature Selection by Simple Dialling.

AN INVESTMENT

- To increase soldering speeds and productivity
- To avoid heat damage to PCB's semi-conductors and IC's
- To avoid cold solder joints

STANDARD LONG-LIFE ARMCLAD TIPS

- Each tip covers the full temperature range

ALL SOLID STATE ELECTRONIC SENSING AND SWITCHING

- Increased reliability
- No moving parts
- No wearing contacts

NO RF INTERFERENCE

- No current leakage



ECT 4925



ECT 425

The whole package. Includes Power Unit E925, Protective Shield E45/95, Tip Wiping Sponge No. 684, and both CT4 Feed-back soldering tool for all Printed Circuit work, instruments and hybrids, and CT9 for light to heavy (100 watt heavy) duty soldering, which can be used alternatively.

\$49.00 (P&P \$1.50)

ECT 425

All you need for any Printed Circuit and instrument type soldering. (5 watt to 40 watt equivalent). Includes Power Unit E425, Protective Shield E45, Tip Wiping Sponge No. 684 and CT4 feed-back soldering tool, weight 4 5/8 oz., fitted with A201038 long life tip.

\$36.95 (P&P \$1.50)

TOOLS

SPINTITES Whitworth 1/8", 5/32, 4BA and 6BA. Popular sizes ideal for rapid assembly work, these nut-drivers save the usual fumbling. Rust-proof with unbreakable handles. Comfortable grip enables you to get the nuts tighter and save wrecked pliers! Essential for those doing a lot of assembly work. 95c each. Set \$4.50



INSPECTION MIRROR No need to pinch one from your dentist! Look into awkward corners with this one. Extra long 14" handle and 2" mirror which your dentist would not have. A bargain at 70c.

STEEL RULE Specially chosen for chassis bashing. They are hardened steel and we selected them for their legibility. Black engraving. Rule is 12" long, graduated in both inches and metric (for those thinking ahead) Well worth 70c.

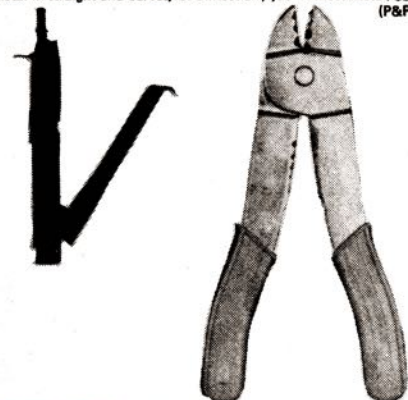
TWEEZERS Where better than Switzerland, home of watch making, to find a really fine pair for electronic use. Needle pointed, very high precision. 4 1/2" nickel plated and very light weight. Also ideal for splinters so get a spare pair for the first aid box.

At only 90c you can afford to!

FILES The number of enquiries we get for miniature needle files. Once again we went to Switzerland for the Favourite set of 6.

As used by Jewellers etc. these are real beauties. Our specially selected set includes 6" Round, Square, Triangular, Half Round, Knife and Flat in a pseudo-leather box with pull-out wooden block. Only \$3.50 for the 6.

NIBBLING TOOL Handy Adel Nibbling Tool will cut up to 16 gauge metal in straight and curves, for almost any job in sheet metal. \$6.45 (P&P 50c)



CRIMPING PLIERS Trust the Japanese — this is a combination wire cutter, stripper and crimper. Just the one tool does the whole job. Suits wires from 10 to 22 awg. Pack also contains 25 terminals in 5 different shapes. Highly recommended at \$1.50.

HACKSAW The popular pattern with adjustable oval tubular frame, chrome plated and die cast handle. Takes 10" blades and we give you a tungsten steel one to practice with (replacements are only 20c). It is cheap but it does the job \$2.50.

SUPER-SCRIBER That is how we justify the price, it is not just an ordinary one. The tungsten carbide tip gives a much better line and lasts forever. We have even sold them for cutting glass but there is a certain knack! Complete with pocket clip so you do not lose it. Only 75c.

HIMAN TRIMMING KNIFE Exactly the same as much more expensive knives. We chose it because it is just as good. 1001 uses cutting everything — ideal for speaker cloth. Inside you will find 5 handy carbon steel blades so get cutting for only 80c.

HEXAGONAL (ALLEN) KEYS How often you need 'em and the one you want is missing. Well our set is on a key ring. They are chrome-vanadium so they will not wreck the sockets. Blue finish and individually marked. We had to go to Holland for this set, but it is the best. 1200 AF set \$1.20 2222 Metric \$1.80

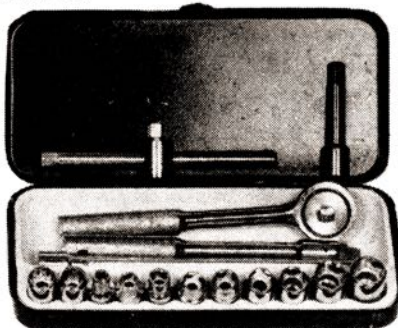


TOOL BOX Handsome and strong and you can put a lock on it to save friends borrowing your special tools. Carrying handle folds flat. Rounded corners. If you have got a decent set of tools keep them that way for only \$3.50. Measures 14 1/2" x 6" x 5 1/2" (P & P 50c)

NO. 4 HOLE CUTTER Made by General in the States. Adjustable from 7/8" to 4" with Allen key locking arrangement to prevent slipping. Leaflet gives speeds for aluminium, plastic, copper, wood, steel and stainless. Complete with key and centre drill. Do not confuse it with cheap cutters that are wrecked after the first job. \$2.95

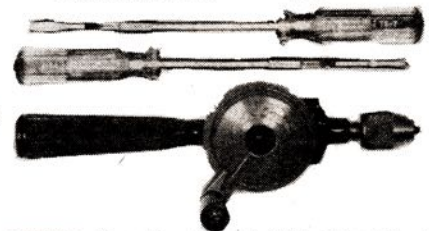
CHASSIS HOLE PUNCH We are told that this a combined metric/inch set. Actually it gives slightly oversize inch measurements to save filing. 5/8, 11/16, 3/4, 1 and 1-3/16" covers all needs and comes complete with reamer \$6.50 (P & P 75c)

17 PIECE SOCKET SET Just like mechanics use but these range from 7/32" to 7/16" S.A.E. Eleven of them plus lever ratchet handle, sliding tee handle, swivel handle with removable tommy bar plus 3" and 6" extension bars. Drop forged for strength and heavily chrome plated. Complete in metal case. Last a lifetime. Also available in metric. \$6.50. (P&P 75c)



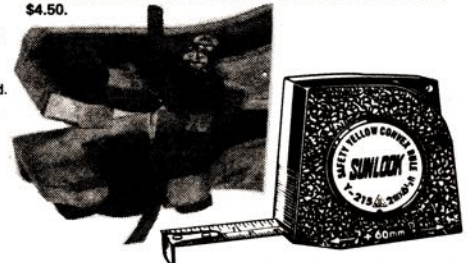
UPSON SCREWDRIVERS We have tried almost every screwdriver in Sydney and these American screwdrivers will take a lot of beating. Unlike most plastic handled drivers these have a 'lock-block' to anchor the blade in the handle. Blades are in chrome alloy with shock and breakproof handles. Plus a retracting screw-gripper which hides in the handle, so you can reach the full length of the blade. You will not find a better driver at the price. Philips and ordinary blades.

TR4C	4" x 5/32 slotted blade	1.00
TS7C	7" x 7/32 slotted blade	1.50
PR6C	6" x 5/32 Philips blade	1.50
PS7C	7" x 7/32 Philips blade	1.60
Complete set (save 60c)		5.00



HANDRILL 'German' brand but made in Italy. Takes drills up to 1/4" in proper 3 jaw chuck. Amazingly compact only 9" long and light weight because a lot of it is made in tough plastic. Pinion, chuck etc. in steel. Silent, smooth action. Hollow handle takes the drills. Recommended at \$2.20. (P&P 50c)

STRIPPER Look at the picture and guess the price. Now divide by 4 because this one comes from Hong Kong. We put it through a comparison test and could not fault it. Six wire sizes and same action — would take too long to describe, you need to try one. Wait for it — \$4.50.



SUNLOCK 215 TAPE Unbreakable ABS plastic case. Tape has self adjusting hook end and is 2m (6ft) long and yellow for easy legibility of the inches and metric scales. Useful stud wall (18") marking. Power return and the blade can be replaced. Value at only \$1.00

MASONRY DRILLS For installing burglar alarms, TV arials etc. We located these in Holland, a beaut set of 5 in plastic wallet. Tungsten carbide tips are larger than most to tackle the toughest reinforced concrete etc. Look out for the red tips. 1/2", 3/8", 5/16", 1/4", 3/16". At \$2.50 that's only 50c each.



7150 SERIES These tools are cheaper than most because they are intended for hobbyists who will not be using them all day long. They are high precision with electronically induction-heat-treated jaws. Coil return springs and large joint for long life. Made to American standards and fully guaranteed. Insulated handles have vinyl cushion grips bonded on. Choose from the following at only \$2.50 each (approx. 4" long). (P&P 50c)

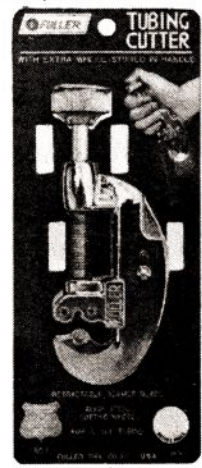
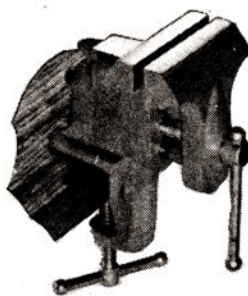
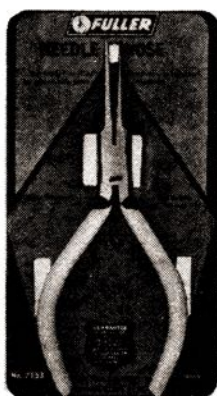
PRECISION PLIERS & CUTTER SERIES 7150

7151 Long-nose	7154 Cutting nippers
7152 Diagonal cutters	7155 Bent nose for tight corners
7153 Needle nose	7156 Flat nose

200 SERIES Highest quality but still intended for hobbyists. Made to US Federal specifications. Heavier construction than 7150 series with same electronically treated jaws and bonded grips. Fully guaranteed. Intended for electricians etc. Choose from the following all at \$2.75 (P&P 50c)

CUTTING PLIERS SERIES 200

Cutters	190-5 5" long	190-6 6" long	190-7 7" long
Long nose pliers	192-5 5 1/2" long	192-6 6 1/2" long	192-8 8" long
Linesman pliers	194-7 7" long	194-8 8" long	



OFFSET SCREWDRIVERS A really useful screwdriver for those inaccessible corners. Two blades: one in line, one across handle, so you've no excuse for loose screws now! Philips or normal blade 80c each \$1.50 pair

1001 ADJUSTABLE WRENCHES Drop-forged in chrome alloy steel. We stock four sizes and they all have a wide range of adjustment by thumbscrew. Chrome plated and highly polished. Built to exceed US Federal specifications and guaranteed. All P & P 50c

No. 5	4"	\$2.00	No. 10	10"	\$4.00
No. 6	6"	\$2.40	No. 12	12"	\$5.00
No. 8	8"	\$3.20			

TABLE VICE made to the tightest specifications and fully guaranteed. The moveable jaw has double guide bars for extra strength. Anvil is ground and polished 3" wide permanent pipe vice jaws holds up to 1 1/2". Nickel plated handles and clamps to bench or kitchen table \$6.25 (P & P \$2.00)

NO. 7 TUBE CUTTER Ideal for cutting aluminium for general pipe use. Suitable for tubes from 1/8th to 1" diameter has very fine adjustment thread for accurate setting and a fold away reamer blade to finish the cut off and save you filing. As an added bonus there is a spare blade in the handle. Rust-proof and chromium plated. A good buy at \$3.20.



NO. 68 WIRESTRIPPERS This pair comes from the USA and has a simple slider adjustment. No fiddling with screwdrivers or spanners to adjust. The jaws are hardened and ground carbon steel so they will still be in use in 20 years. Calibrated for 6 different wire sizes but adjustment is infinite. Strips, cuts and bends wires with a narrow cutting edge for tight corners. How useful for only \$1.70.

COPING SAW We could not resist it since the price is a giveaway. Has nickel-plated frame with depth of 5". Ideal for chassis bashing and we give you five blades for wood and metal. The price is not a misprint 90c.

HOLE SAWS A quick way to drill large holes with an electric drill. We looked at cheap ones but if you are drilling more than a couple of holes you will find it well worth getting these from Millers Falls, USA. 1/4" mandrel fits all drills. We stock two popular sizes - 3/4" and 1". Pilot drill is included and can easily be removed Mandrel \$4.20 Saws \$1.35 each.



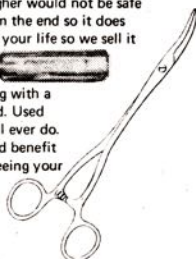
JEWELLERS SCREWDRIVERS SET Note this is not a plastic handle and five screwdriver bits. No, we give you five whole screwdrivers in a see-thru plastic case. They are chrome plated with 3 flat and 2 Philips precision ground blades 4" long. Essential for electrical and electronic use \$1.75.

240V SCREWDRIVER Useful mains checker though the Neon glows from 80-300V AC and 120-500V DC (any higher would not be safe for you). Blade is insulated by handle to 3/4" from the end so it does not short connections. Safety first, it could save your life so we sell it at only 65c.



SCISSOR CLAMPS Made in stainless steel 5" long with a screw joint. They're invaluable as your third hand. Used by surgeons on far more delicate work than you'll ever do. A cross between pliers and scissors with the added benefit of a locking arrangement to maintain the grip, freeing your hands.

Straight 5" \$2.75
Curved 5"



ALIGNING TOOLS

No. 4 Pack - 4 tools

WT5 Hex. nylon with brass inserts
WT6 Nylon double ended hex plus

screwdriver tip

WT8, WT9 as above

Separate tools WT5, WT6, WT8, WT9

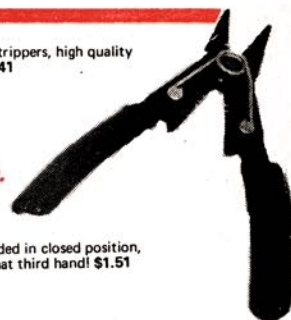
\$1.60
.50¢



PLIKE 4 in 1 pliers, cutters, crimpers and strippers, high quality American made, a must for the workshop. \$3.41



E. S. RUBIN & CO. PTY. LTD.



Small pliers, spring loaded in closed position, solid copper jaws, ideal as that third hand! \$1.51



• FAST • CLEAN • EFFICIENT

**SOLDAVAC
DESOLDERING-TOOL**

Constructed of tough, shatter-proof plastic with a heatproof tip, SOLDAVAC desoldering tool is lightweight and its spring operated suction is designed for one hand operation.



The best de-soldering tool on the market to day. Manufactured in the U.S.A. to rigid specifications, supplied with free "solder ability" manual. In operation the joint to be de-soldered is simply heated, the teflon head of the soldavac is applied to the joint and the trigger pulled - if you are still alive the joint is de-soldered!

Soldavac \$6.95 P&P 50¢
Spare Tips to suit \$1.60 each

ASSOCIATED SERVICES PTY. LTD.

ENQUIRIES ON ORDERS If you wish to enquire in any way about an order FULL DETAILS MUST BE GIVEN. These include date of posting order, name address and postcode given, approximate list of parts ordered, and any mail order/cash sale/ invoice numbers.

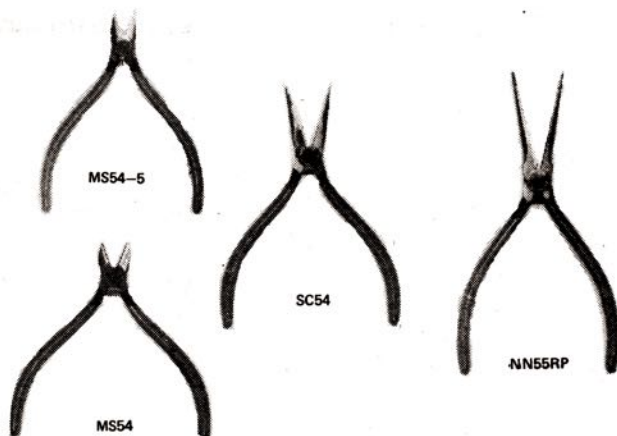
If the above is not given we have no way of checking on your order.

DALO 33 PC MARKING PEN The easy way to make your circuits. The ink is immune to the action of etchants such as ferric chloride. Simply draw the required pattern direct onto the copper, let it dry for 15 minutes, etch the board in the usual way, then remove the ink with solvent. Unique mechanism prevents evaporation ensuring long life. Note the pen is full of ink, not the usual pad soaked in ink.

Pen including spare tip \$1.50
'Sonic Solve' solvent .75c



- Many times the mileage of ordinary pens.
- Reliable valve action feed.
- Replaceable tip.



DIAMALLOY TOOLS These tools, made in America, are the greatest we have ever seen. A real joy to work with. A unique feature is the copper alloy rivet used in the joint. It works just like a precision bearing to eliminate the friction and corrosion you normally have to put up with. Drop forged in a special steel, they stay tough and rigid forever. Cutters are electronically hardened and each tool is individually finished with polished head and gun-metal handles. Guard them with your life, everyone will want to borrow your's!!

MS54 Tapered diagonal cutter with flush edge, tapered point and narrow tips
4" long with 7/16" jaws \$5.50
MS54-5 Flush cutting diagonal cutter with straight sides and flush ground
4" long with 7/16" jaws \$6.70
SC54 Long nose pliers with cutter at tip (ain't that a sensible idea?)
4" long with 1-3/16" jaws, 3/16" cutter is 1/8" from tip \$5.90
NN55RP Needle nosed pliers with serrated jaws to grip better. Weighs only 2 oz.
6" long with 1-13/16" jaws. \$6.30



ROYSTON ELECTRONICS PTY. LTD.



PROFESSIONAL RANGE OF TEST INSTRUMENTS An economically priced range of test gear using all silicon transistors. Fully guaranteed. Note the prices in brackets are for tax-free purchasers. We can personally recommend this gear since we have used them in our service department and for checking out new projects.

Australian Distributors: Parameters Pty. Ltd.

A product of
TRIO ELECTRONICS, INC.
5-17, 3 CHOME, AOBADAI, MEGURO-KU, TOKYO, JAPAN

PARAMETERS
PTY. LTD.

MODEL VT-108 FET-TYPE ELECTRONIC VOLT-OHM METER This is a new FET-type, electronic Volt-Ohm Meter equipped with a "Memory" circuit which will prove to be an indispensable asset on any electronic production line, service bench or educational facility because of its wide versatility, ease of operation and efficient panel layout. All-transistorized for instant voltage and ohm value readings and compact portability, it boasts exceptionally high sensitivity for accurate measurements. A special feature of this advanced multimeter is a built-in "Memory" circuit which memorizes measured values temporarily for instant recall reference of the user.

\$78.20 (P&P \$2.00)

VT-108

DC volt meter:	0.5 to 1,500 V in 8 ranges. 11 MΩ on each range. Accuracy: ±3% at full scale Max. input voltage: 1,500 V DC or 1,500 Vp-p (DC + AC) Polarity: —	Max. input voltage: 1,500 V r.m.s. or 2,100 Vp-p (DC + AC)
AC volt meter:	Range (Sine wave voltage): 1.5 to 1,500 V r.m.s. full scale in 7 ranges (dB): —15 to +66 dBm (Any other voltage): 4.2 to 4,200 Vp-p full scale in 7 ranges Input impedance: 1 MΩ 80 pF at 500 to 1,500 V range 145 pF at 1.5 to 150 V range using (PC-14) probe Accuracy: ±5% at full scale Freq. response: 15 Hz to 5 MHz ±10%	Ohm meter: Range: 0.1 Ω to 1,000 MΩ in 7 ranges. Accuracy: ±5% of setting range at scale 0.3 to 3 ±10% of setting range at scale 0.1 to 10
		Memory: 1% scale variation: Power requirements: Approx. 30 sec. Batteries 4 x (UM-3), 1 x (UM-1) AC operation 100/117/230 VAC also provided with TRIO AD-108 adaptor. W 186 mm x H 131 mm x D 105 mm (W 190 mm x H 138 mm x D 142 mm Max. dimensions) Weight: 2 kg (including Batteries)
		Dimensions:
		Weight:

MODEL CO-1303A SOLID STATE, 75mm HIGH SENSITIVITY OSCILLOSCOPE This is an all solid state, 75 mm oscilloscope with outstanding performance features - vertical sensitivity of 20 mV/cm, bandwidth from 1-5MHz - despite its small size and ease of operation. Lightweight and portable, it will prove to be a very handy and reliable instrument in electronic equipment assembly centers, school classrooms and amateur radio stations for a wide range of scope applications.

\$155.00 (P&P \$2.00)

CO-1303A

CRT:	C30BP1	Input R and C:	1 MΩ, 40 pF
Vertical Sensitivity:	20 mV/cm	Sweep Freq:	10 Hz to 100 kHz in 4 ranges
Attenuator:	1/1, 1/10, 1/100 plus fine control.	Synchronization:	Internal (—)
Bandwidth:	DC: DC to 15MHz (—3 dB) AC: 2 Hz to 15MHz (—3 dB)	Power requirements:	100/117/230 V AC 50/60 Hz.
Input R and C:	1 MΩ, 30 pF	Dimensions:	W 186 mm x H 131 mm x D 350 mm (W 190 mm x H 154 mm x D 377 mm Max. dimensions)
Max. input voltage:	300 V (DC + AC peak) or 600 V p-p	Weight:	4.3 kg
Horizontal Sensitivity:	500 mV/cm		
Attenuator:	Continuously variable		
Freq. response:	DC to 250 kHz		

MODEL AG-202 SOLID STATE AUDIO SIGNAL GENERATOR The AG-202 is a Wien bridge CR-type, sine and square wave audio signal generator which is invaluable for high fidelity analyses in the lab, on service benches and in electronic educational classrooms. All solid state in construction, it produces excellent sine waves instantly with a minimum of distortion and square waves with fast rise time that are ideal for hi-fi tests. Input for synchronization with external signal sources has been provided to further enhance the versatility of this fine instrument.

\$86.25 (P&P \$1.00)

AG-202

Frequency range:	20 Hz to 200 kHz in 4 ranges Range X 1: 20 to 200 kHz Range X 10: 200 to 2,000 Hz Range X 100: 2 to 20 kHz Range X 1,000: 20 to 200 kHz ±(3% + 2 Hz)	External synchronization:	1V/V approx. 3 V r.m.s.
Freq. accuracy:	±1 kHz Reference	Synchronization voltage:	3 V r.m.s.
Sine wave characteristics:	Output voltage: 10 V r.m.s. ±10% Deviation: ±1 dB at 20 Hz to 100 kHz ±1.5 dB at 20 Hz to 200 kHz 0.5% at 50 Hz to 100 kHz 1% at 20 Hz to 200 kHz	Input impedance:	10 kΩ
Distortion:	±1 dB at 20 Hz to 100 kHz	Output impedance:	600 Ω
Square wave characteristics:	Output voltage: 10 Vp-p Overshoot: 3% Sag: 10% at 20 Hz	Output attenuation:	HIGH/LOW (40 dB) and variable control (±10% variation)
		Freq. response:	Level: ±0.5 dB 0 to 50°C
		Ambient temperature range:	100/117/230 V AC 50/60 Hz, 4.7 W
		Power requirements:	W 186 mm x H 131 mm x D 220 mm (W 190 mm x H 154 mm x D 245 mm Max. dimensions)
		Dimensions:	Weight: 2.8 kg
		Weight:	

MODEL SG-402 SOLID STATE RF SIGNAL GENERATOR This is an all solid state, wideband RF Signal Generator which produces low impedance, low-distortion RF signals. It is highly dependable and easy to operate, and is a handy working instrument for service benches and electronic equipment production centres.

\$101.00 (P&P \$2.00)

SG-402

Freq. range:	100 kHz to 30 MHz in 6 ranges Band A 100 kHz to 250 kHz Band B 250 kHz to 600 kHz Band C 500 kHz to 1,400 kHz Band D 1.4 MHz to 40 MHz Band E 4 MHz to 11 MHz Band F 11.0 MHz to 30.0 MHz ±1%	Attenuator:	HIGH/LOW (10:1) and variable control.
Freq. accuracy:	±1%	Modulation:	400 Hz, 40% mod. degree Requires 1.5 V r.m.s. for 40% mod.
Output Voltage:	0.1 V r.m.s.	Internal:	100/117/230 V AC 50/60 Hz, 6 W.
		External:	W 186 mm x H 131 mm x D 220 mm (W 190 mm x H 154 mm x D 245 mm Max. dimensions)
		Power requirements:	Weight: 2.5 kg
		Dimensions:	
		Weight:	

PANEL MOUNTING DIGITAL VOLTMETER Made by Analogue Devices in the USA. This little gem represents a breakthrough in the cost of digital panel meters. The unit features a 3 1/2 digit display using LEDs with a range from 0 to ±199.9mV. It can easily be made into a very high quality digital multimeter by simply adding an external resistive divider network. Power requirement is only 600mA at 5V DC (we suggest a small transformer with a LM309 IC)

Specifications

LED Display with latched B.C.D. outputs, easy to read
Automatic Zero corrections, Max error 0.05% ± 1 digit
Measures 1.8" H x 3" W x 0.75" D
Weights only 4oz

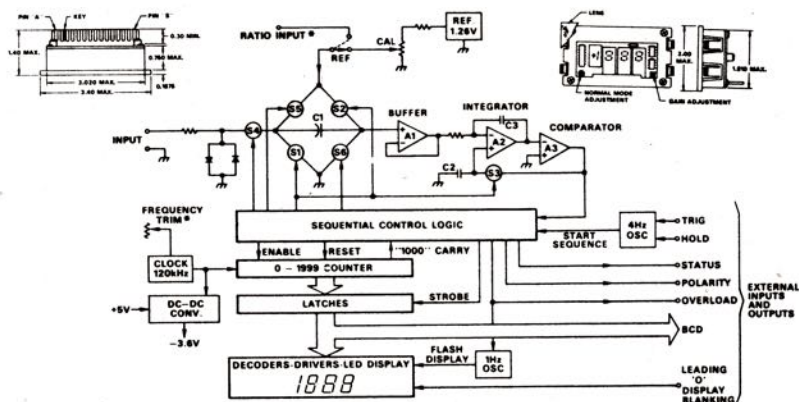


* Full 6 page data available 60c from our Technical Information Service or Free with order.

AD2010 Digital Panel Meter

\$102.00 (P&P \$1.00)

Australian Distributors: Parameters Pty. Ltd.



AD2010 Block Diagram

ANALOG
DEVICES

JACOBY MITCHELL MULTI TESTERS

MULTITESTERS The universal test instrument that everyone needs if they take their hobby seriously. Basic measurements are voltage, current and resistance, most have a db scale and many measure capacitance as well. It's one of the first things you need after a soldering iron for checking components, setting up circuits, locating faults. The selection we show covers all requirements. We have chosen them because they are accurate, rugged and dependable.

Built for ACCURACY with rugged design to RETAIN it— JAYEM M/METERS

- with
- MAGNETICALLY SHIELDED METER
 - BUILT-IN DIODE METER PROTECTION
 - "OFF" POSITION TO PROVIDE METER DAMPING DURING TRANSIT

JAYEM 20K MULTIMETER A compact, general purpose instrument housed in a very strong case with easy to read 90° scale. Reads AC and DC volts and DC current and resistance. An audio level scale calibrated in DB is also incorporated. The compact size makes them ideal for field work, servicing etc. Seventeen accurate ranges meet most requirements.

SPECIFICATION

DC voltage	: 0 — 5, 25, 100, 500, 1000
AC voltage	: 0 — 10, 50, 250, 1000
DC current	: 0 — 50 μ A, 250mA
Resistance	: 0 — 20k, 2Meg (centre scale 260)
Decibels	: —5 to +62 in 4 ranges
Accuracy	: $\pm$ 3% DC voltage and current $\pm$ 4% AC voltage
Sensitivity	: 20,000 ohm/volt DC; 10,000 ohm/volt AC
Meter movement	: 3", 50 μ A full scale
Battery	: Needs one type AA penlight cell for ohms ranges
Dimensions	: 1-15/16" x 3 1/2" x 5-1/16"



\$13.50 (P & P \$1.00)

JAYEM MODEL 50K MULTIMETER — Fantastic Buy

- High Current Scale (0 to 12 amp)
- Compact and Rugged
- Fully Protected
- 43 Ranges

DC Voltage	0-0.3, 0.6, 1.5, 3, 6, 12, 30, 60, 150, 300, 600, 1200
AC Voltage	0-3, 6, 15, 30, 60, 120, 300, 600, 1200
DC Current	0-30, 60 μ A, 1.5, 3, 15, 30, 150, 300 ma, 6, 12 amp
Resistance	0-3K, 300K, 3 meg, 30 meg (centre scale 15)
Decibels	—10 to +17 db
Output	0-3, 6, 15, 30, 60, 120, 300 volts
Accuracy	$\pm$ 3%
Sensitivity	50,000 ohms/volt DC 5,000 ohms/volt AC DC/Circuit sensitivity = 30 μ amp, 120 mv

Meter Movement: 4" meter, 20 μ amp full scale
Size: 2-1/4" x 4" x 6"

\$27.50

P&P \$1.00



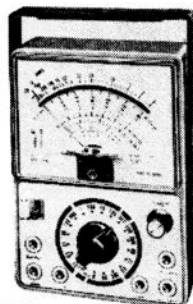
JAYEM MODEL 100K MULTIMETER

- High Sensitivity
- Meter is magnetically shielded
- Built-in Diode protection
- Carrying handle folds down as a support to prop the meter at an angle for reading
- 51 ranges
- Large 5" Meter

DC Voltage	0-0.3, 0.6, 1.2, 1.5, 3, 6, 12, 30, 60, 120, 300, 600, 1200
AC Voltage	0-1.5, 3, 6, 12, 30, 60, 150, 300, 600, 1200
DC Current	0-15, 30 μ A, 3, 6, 30, 60, 150, 300 ma, 6, 12 amp
Resistance	0-2K, 200K, 2 meg, 20 meg (centre scale 20)
Decibels	—20 to +63 in 6 ranges
Output	0-1.5, 3, 6, 12, 30, 60, 150, 300 volts
Accuracy	$\pm$ 3%
Sensitivity	100,000 ohms/volt DC 10,000 ohms/volt AC DC circuit sensitivity = 15 μ amp, 300 mv
Size	2-3/4" x 5-1/4" x 7-1/2"

\$39.50

P&P \$1.00

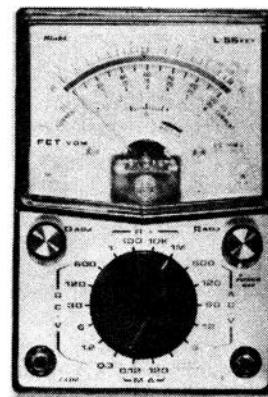


JAYEM MODEL L-55 FET MULTITESTER

The L55 is a fully solid state FET VOM and is an ideal instrument for field service engineers for Radio, Television, Communications and Electronic equipment maintenance. It offers low cost, portability and high accuracy in applications requiring measurements with low circuit loading.

The L55 uses the latest techniques in circuit design and components. It comes complete in an attractive, durable case which will protect the instrument from damage during transportation and use.

As a standard accessory a Model DCVX-2 Probe is provided. This probe increases the input impedance to 20 Megohms and provides a times 2 multiplying factor for the DC Voltage ranges. The 10 Megohm series input impedance of the probe also allow the measurement of DC voltages in the presence of R.F. signals.



- CONSTANT 10 MEGOHM INPUT IMPEDANCE
- 20 MEGOHMS USING DCVX-2 PROBE
- 27 RANGES — A.C.V. A.C.V.pp. D.C.V. mA. OHMS
- BATTERY OPERATED WITH BATTERY CHECK INDICATION
- VINYL CASE SUPPLIED WITH INSTRUMENT

SPECIFICATIONS

DC VOLTS:	0.3 — 1.2, 6, 30, 120, 600 Volts
INPUT IMPEDANCE:	10 Megohms on all ranges 20 Megohms with DCVX-2 Probe
AC VOLTS:	3, 12, 60, 120, 600 Volts (10 Kohms/Volt)
DC MILLIAMPS:	12, 120 mA
OHMS:	0 — 1 Kohm (10 ohms centre scale) 0 — 100 Kohm (1 Kohm centre scale) 0 — 10 Megohm (100 Kohm centre scale) 0 — 1000 Megohm (10 Megohm centre scale)
BATTERIES:	1 x Everready 216. 1 x Everready 915
WEIGHT:	450 grams
SIZE:	130 x 90 x 50 mm
STANDARD ACCESSORIES:	Model DCVX-2 10 Megohm Isolation Probe Vinyl Case
OPTIONAL ACCESSORIES:	Model HP55 High Voltage Probe, Range 30 kV D.C. Model TP1 Temperature Probe, Range —55° to +200°C.

\$43.50

(P&P 75c)

KEWSNAP 5 TONG TESTER Thumb-operated switch gives instant range selection which shows up in viewing window. Body of the instrument can be turned through 180° so the meter can be kept in accurate reading position.

Ammeter ranges: 0 — 5A and 0 — 25A Voltage ranges: 0 — 150, 0 — 300 and 0 — 600V

\$29.00 (P & P \$1.00)



MODEL DSE — 2

Extremely sensitive 20,000 ohms per volt. De luxe portable unit ideal for trouble shooting in all types of equipment. Features a silver plated multi change switch, 17 meter ranges. Supplied with battery and test leads.

Ranges

DC voltage	5—25—50—250—500 and 2.5K volts
AC voltage	10—50—100—500—100 volts
DC current	0—50 MA 0—2.5 MA 0—250 MA
Resistance	0—6K 0—6MEG
Capacitance	10 μ F to .001 μ F, .001 μ F to .1 μ F
Decibels	—20 to +22 DB

Model DSE2



\$12.50 P&P \$1.00

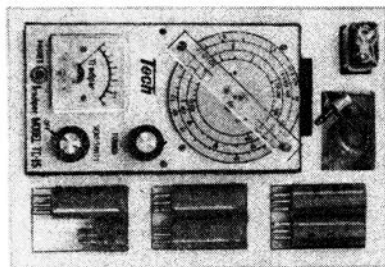
R.F. SIGNAL GENERATOR MODEL TE 20D

A matching unit to model TE 22D, features dual output R.F. terminals, a separate variable audio output and a crystal socket that can be used for self calibration or as a marker generator.

Specifications

Frequency Range:	120kc/s - 500mc/s (6 Fundamental Bands and 1 Harmonic Band)
Frequency Accuracy:	+ 2%
Audio output:	to 8 volts
Internal Modulation:	Approx. 400c/s
Tube complement:	12BH7A, 6AR5, Silicon Diode and Germanium Diode
Printed Circuit for uniform characteristics	
Power Source:	105/125, 220/240 volts AC, 50/60 cps 12 watts
Dimensions:	140 x 215 x 170mm
Weight:	2.8 kg

\$47.50 P&P \$2.00



GRID DIP METER MODEL TE 15 (FULLY TRANSISTORIZED)

This versatile unit operates as a grid dip oscillator, an absorption wavemeter and an oscillating detector. Six plug-in coils are supplied with each unit covering the frequency range 360 Kc to 240 Mc. The unit is ruggedly constructed (full metal case) and also very light in weight. Supplied complete with earpiece, meter and full instruction manual. - A must for all amateurs -

Specifications

Transistors:	3 and 1 diode
Meter:	500uA F/S
Battery:	9 volts PP3
Dimensions:	180 x 80 x 40mm
Weight:	730 g
Frequency Range:	440 kc/s - 280 mc/s with 6 coils: A coil 0.44 - 1.3 mc/s; B coil 1.3 - 4.4 mc/s; C coil 4 - 14 mc/s; D coil 14 - 40 mc/s; E coil 40 - 140 mc/s; F coil 120 - 280 mc/s.

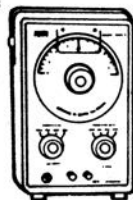
\$36.50
P&P 1.00

DELUXE AUDIO GENERATOR MODEL TE 22D

A factory calibrated and tested unit of high accuracy and stability with both sine and square wave output.

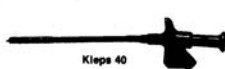
Specifications

Frequency Range:	Sine Wave - 20 to 200,000c/s in 4 bands Square Wave - 20 to 30,000cps
Frequency Response:	+ 1% dB
Output Impedance:	1 Kohm
Frequency Accuracy:	+ 5%
Output Voltage:	Sine wave 7 volts (RMS) Square wave 7 volts (P-P)
Distortion:	Less than 2%
Tube complement:	6BM8, 12AT7, 6x4
Accessory:	1 - Output cable
Power Supply:	AC 50/60 cps 220-240 volts
Dimensions:	215 x 170 x 140mm
Net Weight:	3 Kgs.



\$54.00
P&P 2.00

TEST PRODS



Jabel Test Prod, plated brass tip, Red or Black	30c
Sato Model 2255B, complete set of 2 leads (red and black)	4mm banana plugs \$0.99c
KLEP 40 Hirschman type Hook Probe, high quality, Red or Black	\$1.85
PROBE HOUSING PH3T Clear perspex probe housing	\$3.20
PH4 A nickel plated probe housing 3/4" inside diameter, 4" long, complete with insulated tip and cable bush.	\$2.55

ALLIGATOR CLIPS

(also known as Crocodile clips)



Medium size red or black	1-9 \$0.20	10 up \$0.15
Miniature plastic covered red and black	.15	.10



NOTE Special 512 strand highly flexible wire available to suit these and all other test leads red and black

30 cents per yard

MULTI-PURPOSE MODEL SE360 SIGNAL TRACER INJECTOR

A de luxe instrument of exceptional value this instrument is engineered for high sensitivity as well as good audio quality. Features fully adjustable attenuator and both visual and oral monitors. Ideal for servicing on T.V., AM and FM and audio circuitry. Its high-gain allows tracing of the signal right from the aerial terminals. Features include - meter for visual signal strength reading - output terminals for use with scope or V.T.V.M. - provision for testing external speakers - fully calibrated V.U. meter.

Latest model also incorporates a signal injector making this a truly versatile instrument.

Supplied complete with two shielded test leads (AF & RF), R.F. probe and instruction manual.

Specifications

Signal Injector	approx 1kHz level 0-5V
Gain:	60 dB
Input Impedance:	Over 75K Ohms
Attenuation Factor:	0-20-40-60 dB
Output Impedance:	8 Ohms and 600 Ohms
Meter:	VU200 uA
Speaker:	2 1/2" Dynamic
Power Supply:	9 Volt Dry Cell
Size:	5 1/4" x 3 1/3" x 2"

Model SE 350A

\$32.50 P&P 1.00

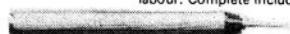


UNIVERSAL SIGNAL INJECTOR MODEL DSE-260

For easy servicing of all radio, T.V., amplifiers, tape equipment etc.

This fully transistorised unit has a signal output from audio through to H.F. frequencies - a must for all servicemen - will pay for itself quickly in saved labour. Complete including 1.5 volt battery.

\$8.50 P&P 30c



STANDARD S.W.R. AND FIELD STRENGTH METER

A robust instrument in a heavy duty metal case. This 2 in 1 unit is usable as a SWR meter and field strength indicator over a range of 1 to 190 MHz. As the insertion loss is negligible it may be left in circuit at all times. All internal components are mounted on a steady circuit board. Supplied complete with telescopic aerial and instructions.

Specifications

Frequency Range:	1-190 MHz
Insertion Loss:	Less than 0.2 dB
Detectable Standing Wave Ratio:	1:1 - 1:10
Impedance:	52 ohms
Input Power:	Min 500mW (CB) Max. 1kW (phone) Max. 2kW PEP (SSB CW)
Meter Sensitivity:	100uA
Size:	(2.36 x 2.36")
Connection:	UHF type
Dimensions:	4 1/2" L x 2" W x 2" D
Weight:	Approx. 1.2 lbs.

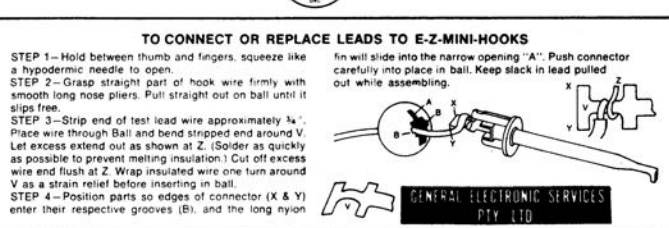
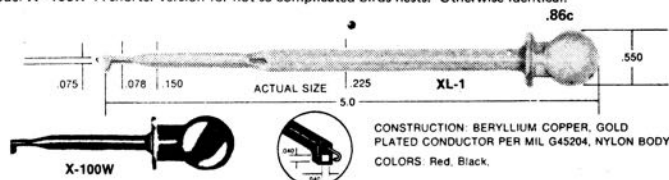
\$15.00
P&P \$1.00



E-Z-HOOK®

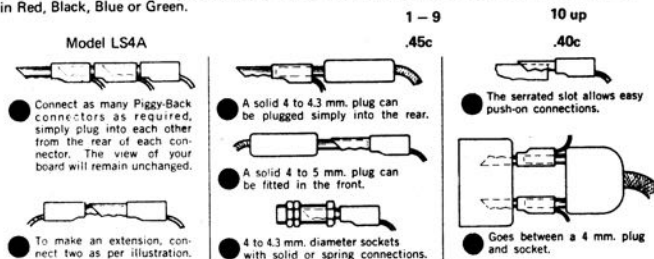
E-Z MINI-HOOKS Commonly known as the 'Impossible Hookers' they are the most tenacious test lead terminations known to man. Leaches could learn a thing or two. Fast, safe, trouble free. They are saving time, money and tempers throughout industry. Ease your blood pressure now. The new XL-1 extra long Mini-Hook reaches through the worst imaginable birds nest to make a safe, short-free connection. Specially designed to slip vertically or hook laterally onto pins etc. Berrillium copper with gold plated contact area. \$1.55

Model X-100W A shorter version for not-so-complicated birds nests. Otherwise identical.



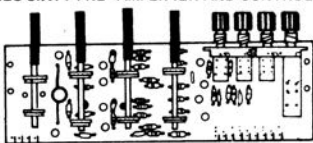
'PIGGY BACK' CONNECTOR AND TEST PLUGS

This amazing 4mm Banana plug, made in Switzerland, is gold plated. Not only will it plug into a standard 4mm socket, but multiple branching can be carried out because they are so versatile. Can be used with plugs up to 4.5mm diameter. Large contact area reduces contact resistance. Available in Red, Black, Blue or Green.



SINCLAIR PRODUCTS FOR THE ELECTRONIC CONSTRUCTOR

STEREO SIXTY PRE-AMPLIFIER AND CONTROL UNIT



Distributed by **GOLDRING Engineering (A'asia) Pty Ltd**



Elegantly modern design with original concepts in circuitry make this pre-amp and tone control unit meet the most stringent high fidelity standards. Basically it is for use with two Z.30 amplifiers powered by a PZ.5 (or PZ.6), but it is equally satisfactory used with other good power amplifiers. Silicon epitaxial planar transistors are used throughout and a very high signal-to-noise ratio has been achieved together with excellent channel separation. The unit is very easy to mount in cabinet or modern plinth with motor and pick-up assembly. Input selection is by means of four push buttons and accurate equalisation is provided for all the usual inputs. The tone controls are also very carefully designed and tested.

Specifications

Input sensitivities:	Radio: up to 3mV Magnetic pick-up: 3mV correct to R.I.A.A. curve ± 1 dB 20 to 25,000Hz Ceramic pick-up: up to 3mV Auxiliary: up to 3mV
Output:	250mV
Signal-to-noise ratio:	Better than -70dB
Channel matching:	Within 1dB
Tone Controls:	Treble +15dB to -15dB at 10kHz Bass +15dB to -15dB at 100Hz
Power consumption:	10mA, max.
Front panel:	Brushed aluminium with black knobs and controls.
Size:	8-1/4" x 1-5/8" x 3-1/2"

(Recommended Price \$42.75)

Price: \$31.00

P&P \$1.00

ACTIVE FILTER UNIT



The Sinclair Active Filter Unit is a new addition to our Project 60 range of high fidelity modules and is designed to complement the other modules in the range. Its performance is such, however, that users of other amplifier systems might well consider adding it to their assemblies. The purpose of a filter unit is to reject frequencies above (scratch) or below (rumble) a specific cut off frequency when these frequencies contain unwanted interference. The Sinclair A.F.U. is unique in that the cut off frequency is continuously variable for both the scratch and rumble units and, as the attenuation in the rejection band is rapid (12dB per octave), the removal of interference can be achieved with less loss of the wanted signal than has previously been possible.

Each channel of the A.F.U. has an overall gain of unity and, as the input impedance is high and the output impedance is low, it may be connected between the pre-amplifier and power amplifier sections of any amplifier. Both amplitude and phase distortion have been made quite negligible by the careful design and the large amount of negative feedback employed.

Specifications

Designed for connection between the Stereo 60 pre-amplifier and two Z.30 or Z.50 power amplifiers.
Employs two Sallen & Key type active filter stages, the first being a rumble (high pass) filter and the second scratch (low pass) filter. The two stages use complementary transistors to minimise distortion.
Supply voltage 15 to 35V
Current 3mA max. Gain at 1kHz, filters flat 0.98 (-0.2dB)
H.F. cut-off (-3dB) variable from 28 kHz to 5 kHz
H.F. filter slope 12dB/octave
L.F. cut off (-3dB) variable from 25 Hz to 100 Hz
L.F. filter slope 12dB/octave
Distortion at 1kHz (35v supply) 0.02% at rated output (250m V.R.M.S.)
Frequency response, flat position, 35 Hz to 20kHz-1dB 25 Hz to 28kHz-3dB

Built, tested and guaranteed

Price: \$21.00

P&P \$1.00

(Recommended Price \$28.63)

Z.30 TWENTY WATT HIGH FIDELITY AMPLIFIER

This is a power amplifier of advanced design, having a fantastically low distortion level of 0.02% at maximum output and all lower outputs. As far as we know, no other high fidelity amplifier made can match this specification, no matter what the price. Nine silicon epitaxial planar transistors are employed in circuitry which enables the Z.30 to operate from any voltage from 8 to 35 without adjustment and from any power supply. Essentially a high fidelity power amplifier of the very highest standards, the gain of the Z.30 is such that it can be fed directly from a crystal pick-up enabling it to be used in an economy battery operated record player for example. The versatile Z.30 has very many applications, however, ranging from high fidelity to P.A. and laboratory work and these are fully detailed in the comprehensive manual included with the unit, which is supplied built, tested and guaranteed.

Applications

Hi-fi amplifier: car radio amplifier: record player amplifier fed directly from pick-up: intercom: electronic music and instruments: P.A.: laboratory work, etc. Full details for these and many other applications are given in the manual supplied with the Z.30.

Specifications

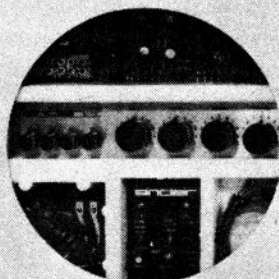
Power output:	15 watts R.M.S. (30 watts peak) into 8 ohms using a 35 volt supply: 20 watts R.M.S. (40 watts peak) into 3 ohms using a 30 volt supply.
Output:	Class AB
Frequency response:	30 to 300,000Hz ± 1 dB
Distortion:	0.02% total harmonic distortion at full output into 8 ohms and at all lower output levels.
Signal to noise ratio:	Better than -70dB unweighted.
Input sensitivity:	250mV into 100K ohms.
Damping factor:	> 500
Loudspeaker impedances:	3 to 15 ohms
Power requirements:	From 8 to 35 volts d.c. (the Z.30 will operate ideally from batteries if required).
Size:	3-1/2" x 2-1/4" x 1-1/2"

Price: \$13.00

P&P \$0.6

(Recommended price \$17.76)

Sinclair Project 605 Amplifier



30 watt hi-fi stereo modular amplifier complete & ready to assemble using the new Masterlink connector unit. **No soldering**

SINCLAIR PROJECT 605 AMPLIFIER

The Project 605 is in effect a ready built stereo amplifier for the 'Do it yourself' enthusiast who does not have any special audio or electrical knowledge.

The Project 605 is based on four of the well known and proven Sinclair Project 605 Modules. The Project has an additional unit—MASTERLINK—through which all internal connections are routed by means of push on tags already fitted to wires of the correct length.

Soldering is completely eliminated.

Specifications: Project 605 Amplifier

Output:	30 watts music power (10 watts per channel RMS continuous into 3 ohms).
Inputs:	Magnetic pick-up: 3mV corrected to R.I.A.A. curve 20-25,000 Hz ± 1 dB. Ceramic pickup, suitable for ceramic cartridges with outputs down to 50mV. Radio, suitable for most Tuners with outputs between 50 and 150 millivolts. Auxiliary, adjustable between 3 millivolts and 3 volts. Signal to noise ratio, better than 70dB.
Distortion:	Better than 0.15%.
Controls:	Press buttons for on/off pickup, radio and auxiliary. Treble plus 15 to minus 15dB at 10kHz. Bass plus 15 to minus 15dB at 100Hz. Volume. Stereo Balance.
Channel Matching:	Within 1dB.
Front Panel:	Brushed aluminium with black knobs.

The 605 Kit contains:-

- 2 x Z30 Amps.
- 1 x Stereo Pre Amp Control Unit.
- 1 x PX5 Power Supply.
- 1 x Master Link Connector Unit with all necessary inter-connecting wires tagged at each end.
- 1 x Full Instruction Manual.

(Recommended Price \$125.00)

Price: \$93.00

P&P \$3.00

Z.50 FORTY WATT RMS (80 watt peak) HIGH FIDELITY POWER AMPLIFIER

The Z.50 has been designed for applications requiring higher output power than the Z.30. The maximum supply voltage is raised to 50 Volts and the output power is 40 watts continuous R.M.S. into 3 or 4 ohms and 30 watts continuous into 8 ohms. The Z.50 is otherwise identical to the Z.30 in design and specification, the increased power being obtained by using much higher current power transistors used well within their rated limits.

The Z.50 is, of course, compatible with the other Project 60 modules, such as the Stereo 60.

Where the full output power is not required the Z.50 may be used with the PZ-5 or PZ-6 but for the full output power the PZ-8 should be used. This unit is a stabilised power supply providing 45 volts at up to 3 amps. It is supplied without mains transformer as it is designed for use with a readily available "Radiospares" unit. Z.50 built, tested and guaranteed.

(Recommended price \$21.35)

Price: \$16.00

P&P 50¢

SINCLAIR IC12 AMPLIFIER

The Sinclair IC12 is a true High-Fidelity Amplifier, possessing distinct advantages over conventional types. The most important are complete freedom from thermal runaway and very low distortion.

To facilitate easier mounting of components the IC12 comes complete with printed circuit board. Heat dissipation problems are overcome as the IC12 has heat sinks attached.

The IC12 will operate from as little as six volts, but the maximum output power is reduced.

A fully comprehensive manual including details of special applications is supplied with each IC12 Amplifier.

Specifications:

Output Power:	6 watts RMS
Frequency Response:	5Hz to 50kHz
Total Harmonic Distortion:	Less than 1%.
Load Impedance:	Greater than 3Ω
Power Gain:	90dB
Supply Voltage:	6 to 28 volts
Size:	22 x 45 x 28mm.
Input Impedance:	250K nominal.



(Recommended Price: \$10.75)

Price: \$8.00

P&P 75¢

PZ.5 AND PZ.6 POWER SUPPLY UNITS

Two types of mains-power supply units are available for use with Sinclair high fidelity equipment. For the majority of domestic applications the PZ.5 will be found completely adequate. Where very low efficiency loudspeakers are used, however, it will be necessary to use a PZ.6 Stabilised Power Unit. Use of the latter is also indicated where maximum outputs are required from the amplifier system under extreme operating conditions.

PZ.5

Unstabilised power supply unit recommended for two Z.30 amplifiers and Stereo 60 for all average requirements. **\$15.60**

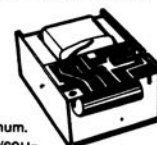
Specifications

Output:	30 volts/1.5 amps maximum.
Mains input:	110-24 volts $\pm 20\%$ 50/60Hz.
Size:	3-9" x 2-8" x 1-6"

PZ.6

Stabilised mains supply unit delivers 35 volts at 1.5 amps with ripple less than 20mV at any output up to maximum current.

Size: 3-9" x 2-8" x 1-6"



\$26.50

P&P \$1.00

PZ.8 POWER SUPPLY UNIT

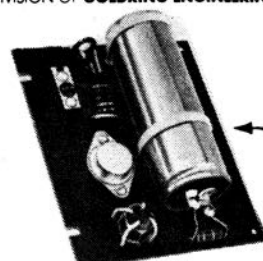
PZ.8 45 volts power supply unit for use with Z.50 amplifiers. Available with or without mains transformer.

PZ. 8 unit only \$23.00

Mains transformer to suit \$21.00

P&P \$1.00

A DIVISION OF GOLDRING ENGINEERING



NIDAC SECURITY PRODUCTS

DO-IT-YOURSELF BURGLAR ALARM COMPONENTS The following range of components is Australian made throughout. You can give your home, office, shop or factory complete 24 hour protection using these modules which are supplied with complete instructions. Ideal for professional electrical alarm installers or the keen hobbyist. Every single module is solid state for the highest reliability and will give many years service without maintenance.

PL1-2 ALARM MODULE Is the heart of any local alarm system. This one caters for open circuit (e.g. pressure mats) and closed circuit (e.g. window tape) transducers. The alarm locks ON until reset and operates instantaneously. Requires a quiescent current of only 200uA at 12V DC (dry battery ideal). Capable of switching 1Amp maximum



\$ 11.20

PLD-2 DELAYED ALARM MODULE has similar features to the PL1-2 above but includes a completely separate 'delay' circuit with both normally open and closed connections. The 'instant' circuit becomes operative the moment power is connected to the module and cannot be interrupted without triggering the alarm. The separate 'delay' circuit allows sufficient time to enter or leave the building before it is activated, and would normally operate from the door switch. This means that the normal key switch is not required. Operates from 12V, switching a maximum of 1Amp. Delays are 40 second exit and 25 second entry (adjustable). Current drain 0.8mA



\$ 22.40

SPR-1 'WHIP' ALARM MODULE is really two modules in one. An instant latch module similar to the PL1-2 combined with an electronic Audible Deterrent device. Operates into RUH-5 speakers to give an unbelievable sound!

\$ 24.90

PTC-2 TIME OUT MODULE Is designed to reset the SPR-1 module after 2 to 25 minutes (adjustable) if the alarm has been reset. Makes the alarm fully automatic

\$ 19.20

RUH-5 HORN SPEAKER Is a 5Watt 8ohm miniature horn for use with deterrent modules or even as a general purpose horn. Anodised gold finish with rugged weatherproof construction 5" max diameter



\$ 10.50 (P&P 50c)



AUDIBLE DETERRENT MODULES These are the modern electronic replacement for bells and sirens. Simply connect them to loudspeakers RUH-5 to provide a loud, irritating and enormously effective deterrent sound. (In an enclosed space it will drive you insane). To sound alarm in more than one area it is only necessary to add speakers, which gives considerable cost saving. Also ideal for vehicle alarms since it operates from 12V DC taking only 150mA. No moving parts and protected against reverse polarity. Choice of RAS-2 Siren, RAY-2 Yip, RAW-2 Whip



\$ 16.90

HPS-1 POWER PACK What's the use of any alarm system if the power supply is no good? The HPS-1 fully protected 240V AC/13.2V DC supply is designed to Lab specifications so that you get 13.2V DC with only 0.5mV ripple right up to the rated output of 1Amp. Naturally it's short circuit proof and has a regulation better than 0.2%. In the event of a power failure switch-over to standby batteries is instantaneous with no interruption to equipment. Unit can be used to float charge a wet-cell. Many of these supplies have also been sold for use as bench supplies or for running car radios etc in the home.

\$ 35.34 (P&P \$1.00)

MADE IN AUSTRALIA BY —



In the interest of security.

BURGLAR ALARM COMPONENTS

DETECTING DEVICES AND ACCESSORIES

DPT-4 CIRCUIT TAPE Designed for closed circuit alarms, this adhesive tape breaks the instant a window is cracked. Makes a good deterrent whether connected to an alarm or not!

36 yds 1/4" wide



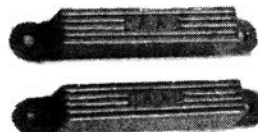
1 - 9
\$ 1.95

10 up
\$ 1.70

HTA-10 TAPE BLOCKS For connections to above tape

18c

15c



DPR-2 MAGNETIC REED SWITCHES complete with magnet in plastic case for door mounting etc or general reed use

\$ 1.80

\$ 1.60

HSM-1 Magnet only, no case

50c

45c

HSR-2 Reed switch only, no case for direct mounting

80c

70c

DPM-1 PRESSURE MAT Is a heavy duty, ultra-thin mat for placing under carpets, contacts close when activated. Ideal for use with Sonalert as entry signaller. Large 32" x 22"

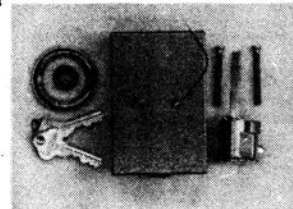
\$ 10.00

\$ 9.50

HSD-1 DOOR MOUNTING KEY SWITCH For bridging out reed switches on exit doors or controlling main alarm 78000 different key combinations so we give you 2-Keys. Silver contacts

\$ 8.40

\$ 7.60



HSD-6 Barrell type key switch for many applications including car alarms. Includes 2 keys

\$ 3.85

\$ 3.50

RAB-8 8" High Quality low-current bell

\$ 18.90 (P&P 50c)

6N2 6 volt, 2Amp rechargeable wet cell

\$ 4.50 (P&P 50c)

731 Heavy duty dry cell

\$ 3.75 (P&P 50c)

HMB-10 Heavy duty control cabinet with lock

\$ 13.75 (P&P \$1.00)

HMB-1 Siren cover for RUH-5 or RAB-8

\$ 6.90 (P&P 50c)

Other NIDAC Professional Alarm products available - write for brochure - including

DAB-6 Laser guard, 60ft infra-red unit

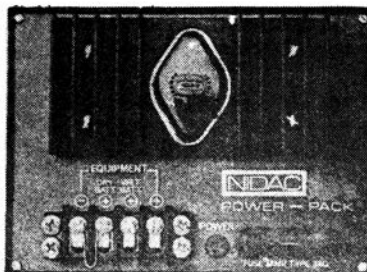
\$ 71.00

RAT-5 Alignment unit

\$ 31.00

DAU-M2 Ultrasonic movement detector (covers 400 sq ft)

\$132.00



CAR BURGLAR ALARM*

CARGARD 100HR* A fully automatic car burglar alarm which can be installed in minutes in any 12 volt vehicle. (It detects any disturbance in the electrical system of the car e.g. when a door courtesy light operates - so it eliminates all special wiring, door switches and other installation problems). An electronic exit/entry delay is included in the module so the unit can be switched on from inside the car before the driver leaves. The output is a pulsating horn relay which automatically resets after three minutes.

A full set of parts, assembled and tested with detailed instructions for the do-it-yourself man to install in any 12 volt car is available for \$29.50 including post and packaging.

CARGARD is fully guaranteed by the manufacturers for 12 months from date of purchase.



\$29.50
COMPLETE

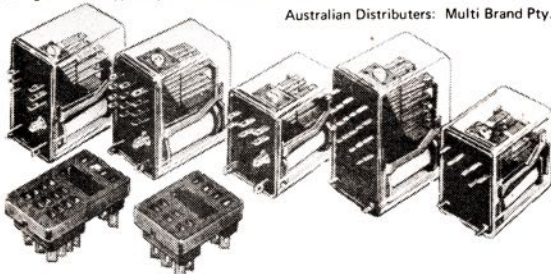


* Aust Patent 34882/71

RELAYS

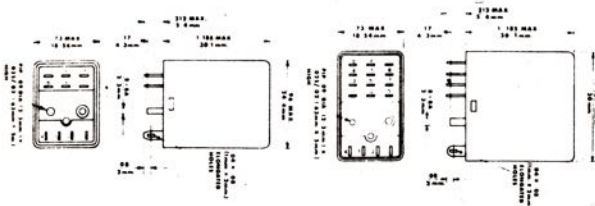
DAVALL RELAYS Extremely small, compact relays manufactured by Davall in England and enclosed in transparent cases. Note the small size. There are thousands of uses for these relays where low level switching is required. Very high reliability because they are ultrasonically cleaned before and after assembly. Every one is 100% checked under operational conditions. Magnetic circuit uses Swedish Iron. Light duty contacts have a life in excess of 100 million operations, heavy duty in excess of 1 million. Insulation of light duty relays is 500V 50Hz and heavy duty 1kV rms at 50Hz. Operating times are typically 6-10ms and release times 3-4ms.

Australian Distributors: Multi Brand Pty. Ltd.



STANDARD CONTACT - Gold flashed silver contact handles 30W (1A or 100V max)

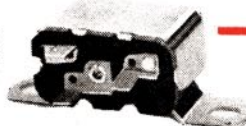
Code	Nom Coil Volts	Min Coil Volts	Max Coil Volts	Coil Ohms	Contact Assy	1 - 9	10 up
21/2CA 185	12	5	17	185	2 C.O.	\$2.75	2.50
21/2CA 700	24	11	33	700	2 C.O.	2.75	2.50
Special Note: The 21/2CA 185 will operate satisfactorily off 6 volts							
21/4CA 185	12	8	17	185	4 C.O.	\$3.50	\$3.25
21/4CA 700	24	16	33	700	4 C.O.	3.50	3.25
21/4CA 2500	48	31	62	2500	4 C.O.	3.50	3.25



HEAVY DUTY CONTACT Silver contact handles 100W (5A or 270V d.c. max.)

21/2C5 185	12	8	17	185	2 C.O.	3.00	2.75
21/2C5 700	24	16	33	700	2 C.O.	3.00	2.75

SILVER PLATED SOCKETS TO SUIT
2 C.O. Type .46c 4 C.O. Type .50c



SONALERT

Sonalert is a startling innovation in the audible signal-warning field. It produces a penetrating sound by purely electronic means. Circuitry is all "solid-state" for maximum efficiency, lowest current requirements, and highest reliability. Because circuitry is solid-state, there is no arcing, no RF noise, and no mechanical wear.

The basic operation is achieved by an oscillating circuit driving a proprietary designed piezoelectric ceramic transducer. It is voltage sensitive and the output can be varied by voltage input. The rise time for full output is approximately 50 microseconds.

Current consumption is directly proportional to voltage input since the unit acts as a 2K ohm impedance over the voltage range. The peak voltage including any spikes on the supply line should never exceed 28 volts.

Sonalert is very compact, very light, and highly versatile. Consuming less current than a normal indicator light the device can be utilised to complement visual signals. Thus, positive audible warnings are instantly given in fault alarms for computers, fire signals, instruments, medical electronics, appliances, communications as well as telephone signals and protection equipment.

\$10.35

Free Offer

Supplied complete with bracket and wiring diagram to make a headlight warning device and a flasher timer - no other parts required.

Specifications (Standard models)

Operating Voltage: 6-28 VDC

Operating Current:
3 mA at 6 volts
6 mA at 12 volts
12 mA at 24 volts
14 mA at 28 volts

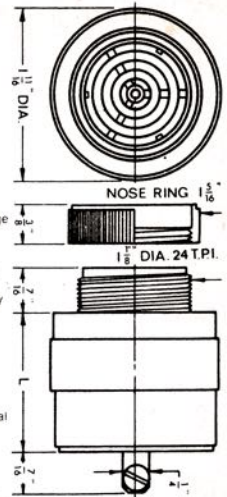
Sound Output: 68-80 decibels depending on voltage

Sound Frequency: 2800 Hz $\pm$ 300 Hz

Sound frequency is determined by characteristics of piezoelectric transducer and cannot be altered by external means

Operating Temperature: -40°C to +85°C for all units due to new all silicon transistor design.

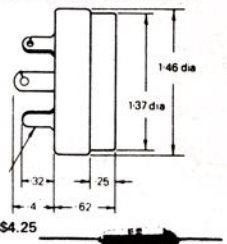
Humidity: 95% at room temperature. Note: Sonalert is not water-proof. A special housing is required for fully submerged operation.



PLESSEY



MINI SONALERT
Operates off 1 to 4 volts D.C.
Ear splitting 3,500 Hz note. **\$7.50**



E CELLS PLESSEY "E" CELL Model 560-002 \$4.25

A reversible electronic integrator with nonvolatile memory for Timing, Integrating and Counting.

The Plessey E-cell is a circuit component (sometimes called a Microcoulometer) which integrates electron flow in either direction retaining the last integral (set charge) in its memory indefinitely. Whenever the integral in the memory is made zero (cleared), the component changes state providing an electrical trigger signal.

COLOUR TIMER

This new device is in the form of a small B.C. light bulb fitted with yellow liquid. If a small current is passed through the bulb the liquid changes to green after a predetermined time.

TYPICAL CONDITIONS

Time measured (hours)	50	100	250	500	1000
Series resistance (12V D.C.)	100K	200K	500K	1 Meg.	2 Meg.

Ideal as stylus timer, hour meter, oil change indicator etc.

\$1.35 each

PASI MINIATURE RELAY The MS series which we stock is a really heavy duty miniature relay capable of switching up to 250V and 6A with a maximum power of 550W.

SPECIFICATION

Contact assembly	: single changeover nickel/silver
Operating time	: 7 - 9ms
Release time	: 3 - 5ms
Maximum non-inductive load	: 250V, 6A, 550W
Tested winding to body to contacts	: 2000V
Coil resistance	: 300 ohm
Coil voltage	: 12V
Operating power	: 203 - 361mW
Excitation	: 90 Ampere turns



1 - 9 10 up
\$2.75 \$2.50



TYPE H2 HORN RELAY

A heavy duty relay which operates on 12 volts, extremely heavy duty contacts rated at over 20 amps. Originally designed for automotive use but can be used in any rugged heavy duty application - ideal for car burglar alarms.

\$1.50 P&P 30¢

COILS R.F.

RCS221 Aerial Coil	\$2.75
RCS178 IF Coil	\$2.95
S201 Shielded subminiature oscillator coil 5/8" square x 1 1/2" high, no padder capacitor required	\$1.85
S203 Shielded subminiature aerial coil 5/8" square x 1 1/2" high	3.10
J32/33 455 K.C. miniature universal I.F. transformer 3/4" square	5.90
ST45C & ST45D 455 K.C. standard & det. match	1.85

COIL FORMERS AND ACCESSORIES

Figure	Code	Description	1-9	10 up
1	722/1	5mm former, subminiature (4mm core)	.15	.12
2	5027/6PLB	6 Pin base to suit above	.18	.15
3	7100	Can to suit above 1/2" x 1/2" x 1/2" high	.18	.15
4	5200/8PLB	Double 8 pin base for 722/1 former	.20	.16
5	7300	Can 1/2" x 1" x 1/2" high to suit above	.20	.16
6	722/4	5mm former 1 1/2" high (for I.F.)	.20	.16
7	7101	Can 1/2" x 1/2" x 1/2" suit above	.20	.16
8	3510	7mm former 3/4" high twin 6BA base mounting	.18	.14
9	N4LT1	Tag ring for above, 4 connections	.12	.10
10	2450 1.6W	7mm former P.C. board mounting, fibreglass, 6 pins	.24	.20
11	655	7mm former 1-1/8" long 4 wire leads	.24	.20
12	5000B/6PLB	7mm former 2 1/2" high with 6 pin base	.30	.25
13	5001 4E	Top plate for above, 4 connections	.08	.06
14	D.TV1	3/4" square can suit 5000B former	.40	.36
15	5000A/6PLB	7mm former 1 1/4" high with 6 pin base	.24	.20
16	DTV2	3/4" can to suit above	.36	.30
17	2000	1/2" diam. x 1 1/4" former tapped 4 B.A. for stem	.20	.18
18	FC1	Chassis mounting clip for above	.04	.03

COIL FORMER ASSEMBLIES

When ordering specify cores required. (See below)

Code	Description	1-9	10 up
S.M.S.	Subminiature I.F. assembly comprises 722/1 former, 7100 can 5027/6PLB base, 4 cores, cup cores and ring	.85	.70
S.M.T.	Complete double I.F. assembly including all ferrites and 2 x 722/1 formers	1.25	1.00
7/500B	Miniature I.F. assembly, 7mm 2 1/2" high, complete including 2 cores (900 type) 5000B/6PLB, former and D.TV1 can	.90	.75
7/500A	As above but 1 1/4" high uses 5000A/6PLB former etc.	.80	.70
S.W.	Short wave assembly complete including 2000 former, stem core and chassis mounting clip	.50	.40

CORES (FERRITE AND IRON DUST)

Ferrite Cores (4mm) for neosid 722 formers. Two frequency ranges available, F16 (500KC to 15 MHz) and F29 (10 MHz to 300 MHz).

	1-9	10 up
4mm x 0.5 pitch x 10mm long F16 slotted core	.12	.10
4mm x 0.5 pitch x 10mm long F29 slotted core	.12	.10

Iron Dust Cores (6mm) for neosid 3510, 2450, 655 and 5000 formers.

	1-9	10 up
19 H6 x 1 x 12 x 500 (up to 10 MHz)	.10	.08
H6 x 1 x 12 x 900 (5 MHz to 60 MHz)	.10	.08
H6 x 1 x 12 x 901 (30 MHz to 200 MHz)	.10	.08
H6 x 1 x 12 x 910 (To 300 MHz)	.10	.08

Balun Formers

	1-9	10 up
20 1050/1/F14 (40 to 200 MHz)	.35	.30
1050/2/F29 (10 MHz to 220 MHz)	.35	.30
655 (Equiv. Ducon F684, Q2)	.35	.30

TOROID BALUNS

FOR TRANSMITTER USE P&P 75c

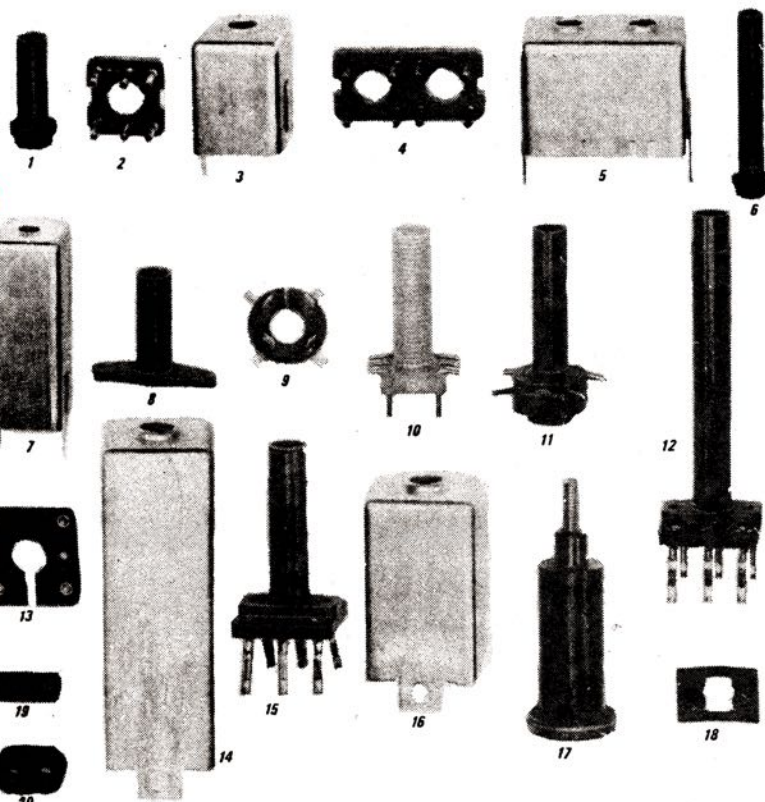
350A	Impedance ratio 1:1. 75 ohms unbalanced to 75 ohms balanced. 3 to 30 Mc/s. For use at centre of a dipole antenna with coaxial cable feed line or at base end with 75 ohm twin line. Coaxial connector is Belling & Lee L 604/S and lug terminals. 400 watts P.E.P.	\$7.30
351A	Impedance ratio 1:4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc/s. For use at centre of a folded dipole antenna with coaxial feed line or at base end with 300 ohm twin line connector and terminals as 350A. 400 watts P.E.P.	\$11.50

CHOKES

R.F. We stock a full range of R.F. chokes manufactured by Paris.

Range in uH	1-4	5 up
10, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 220, 270, 330, 390, 470, 560, 680, 800	65¢	53¢
Range in mH		
1, 1.5 and 2.5	95¢	70¢
5.0 mH	\$1.60	\$1.50
10.0 mH	\$1.70	\$1.60

P&P 20¢



COIL WINDING DATA

S.W.G.	Diameter in Inches	Diameter in mm	No. of turns per inch (Enamelled wire)	Equivalent B. & S.
18	.048	1.219	10.7	16
19	.040	1.016	23.5	18
21	.032	.813	29.2	20
23	.028	.711	38.3	22
25	.020	.508	45.5	24
27	.0164	.417	55.1	26
30	.0124	.315	72.5	28
33	.0100	.254	89.3	30
36	.0076	.193	116	32
38	.0060	.152	145	34
40	.0048	.122		36
42	.0040	.102		38
44	.0032	.081		40

WINDING WIRE

Handy spools of coiled winding wire.

B. & S.	S.W.G.	Approx. Length	Price
16	18		1 lb. \$2.60
18	19		1 lb. 2.60
20	21		1 lb. 2.60
22	23		1 lb. 2.60
24	25	100'	1.00
26	27	100'	1.00
30	33	200'	1.00
32	36	400	1.00
36	40	800	1.00
40	44	1200	1.00

AERIALS - FERRITE ROD

Ideal for home construction and service replacement use.

SA515 5" Ferrite rod with broadcast band coil, requires 415 P.F. variable capacitor	2.60
SA211 5" Ferrite rod with broadcast band coil, for 200 P.F. tuning capacitor	2.96

FERRITE BARS PARTS ETC.

L2 Aerial Rod 6" long 3/4" flat	\$1.30
L1 Aerial Rod 8" long, approx. 3/8" diam.	.85¢
L3 Aerial Rod 8" long 1/4" diam.	1.75
FX2242 Ferrite core assembly, two halves including former and clamp (for C.D.I. ignition etc.)	2.50
FX2243 Slightly larger than FX2242 including 2 cup cores and spool	\$4.00 each
Cup cores only	\$1.80 each
FX1115 Ferrite Beads	0.10 each
Toroids - Ducon Q2 F4040/2 (1/2" diameter)	.55¢
PHILIPS E core and former to suit fluoro light project	\$2.90

ENQUIRIES ON ORDERS If you wish to enquire in any way about an order FULL DETAILS MUST BE GIVEN. These include date of posting order, name address and postcode given, approximate list of parts ordered, and any mail order/cash sale/ invoice numbers.

If the above is not given we have no way of checking on your order.

AERIALS — MOBILE RADIO

Gold Standard "Scalar Industries" Mobile whip Antennas for two way radio applications - as used by Police Dept's, Ambulance etc., - including cutting charts - mount through the top through 7/8" dia. hole in vehicle roof. No need to remove roof lining etc.,.

M60 Fibreglass	48-78 MHz	1/4 Wave	\$10.35
M12 Fibreglass	70-100 MHz	1/4 Wave	8.17
M11 Stainless Steel	70-100 MHz	1/4 Wave	6.56
M22 Fibreglass	140-200 MHz	1/4 Wave	6.73
M21 Stainless Steel	140-200 MHz	1/4 Wave	6.27



SPECIAL ANTENNAS AND ACCESSORIES

M25 Fibreglass	148-175 MHz	5/8 Wave	\$13.80
3db Gain constructed with integral base load coil (Cutting chart supplied)			

M27R Fibreglass	27MHz	Centre loaded	\$15.53
Mobile Antenna (less than 36" long)			

MK Knockdown adaptor (chromed)			\$ 6.56
For Scalar Mobile antennas - antenna can be laid flat on roof.			

MS Spring Adaptor (chromed)			\$ 4.37
Ideal for use in timbered country - allows antenna to knock down and spring back.			

MGB Magnabase			\$27.60
High quality magnetic base-fit all Scalar Mobile whips Instant installation on any flat metal surface.			



SCALAR
Industries
Pty Ltd

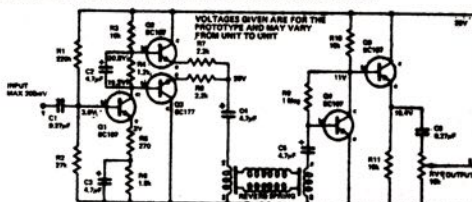
On Aerials and Accessories P&P 75c



SPRING REVERBERATION UNIT The sound of many musical instruments can be enhanced by the addition of reverberation which gives life and brilliance to otherwise flat sounds. The technique has been successfully used by many musicians and Groups to give added impact to their performances. The natural string decay of electric guitars, for example, is greatly enhanced by reverberation.

Our suggested circuit comes from Electronics Today March 72 and shows an inexpensive way to add the unit on to any amplifier.

Specifications
Maximum Input : 530mV
Maximum Output : 20mV
Frequency response : 60 - 5500Hz
Insertion loss : 50db
Input impedance : 1475ohm
Output impedance : 2250ohm

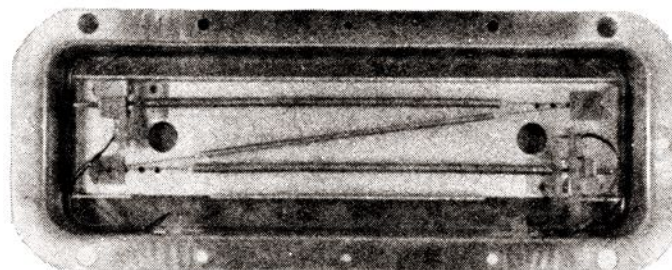
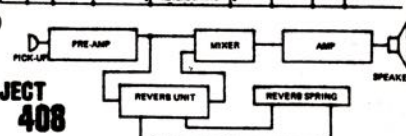


400/52

\$ 17.50 (P&P \$1.00)

Australian Distributor Plessey Rola Pty. Ltd.

PROJECT
408



**PLESSEY
Rola**

muRata CERAMIC FILTERS (for 455kHz operation)

SFD455B (SF455D) The modern replacement of the if transformer. Two resonators are coupled by an external capacitance to give maximum selectivity with a flat response. Typical selectivity 20db min at ± 10 kHz with 3db bandwidth of ± 4.5 kHz

1-9 \$ 85c 10 up \$ 75c

SFB455A (SF455B) A resonance type filter for 455kHz to replace the transistor radio ift. 3db bandwidth is 10kHz ± 3 kHz; input and output impedance is 3kohm with a maximum insertion loss of 5db.

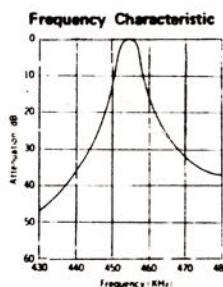
1-9 \$ 60c 10 up \$ 50c

BFB455A (BF455A) Improves selectivity by replacing the emitter by-pass capacitors in transistor if stages. Simplifies alignment and gives long term reliability

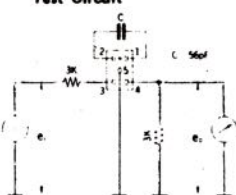
1-9 \$ 50c 10 up \$ 45c

YFL455A An if filter which features conventional windings as well as a ceramic filter. Typical selectivity is 19db down at ± 10 kHz with 3db bandwidth being 5.5kHz min.

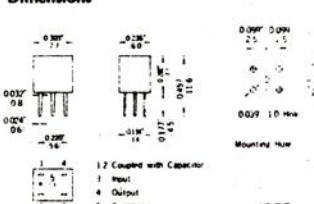
1-9 \$2.25 10 up \$2.00



Test Circuit

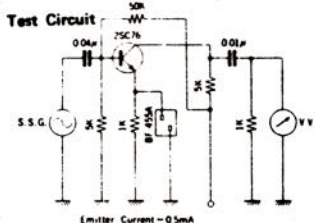


Dimensions

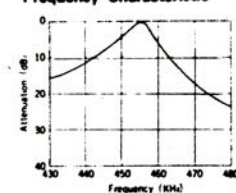


Specifications

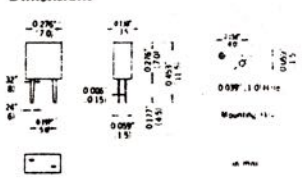
Items	Center Frequency (kHz)	3db Band Width (kHz)	Selectivity	Ripple	Input and Output Impedance	Insertion Loss	Frequency Stability Temperature	Frequency Stability Time	Working Voltage
SFD-455B	455 $\pm$ 2	4.5 $\pm$ 1	26db Min. at 10kHz 20db Min. at $\pm$ 10kHz	1.5db Max.	3K Ω	9db Max.	Within $\pm$ 0.4% from 10°C to $\pm$ 80°C	Within 0.5% for 10 years	50VDC



Frequency Characteristic

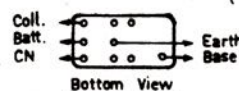
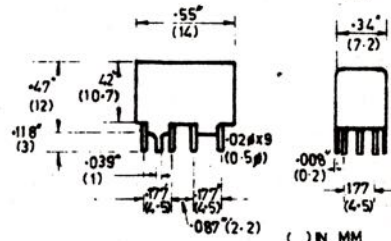
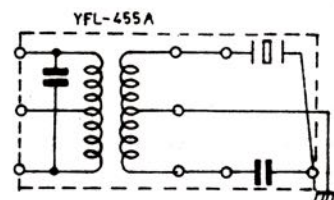


Dimensions



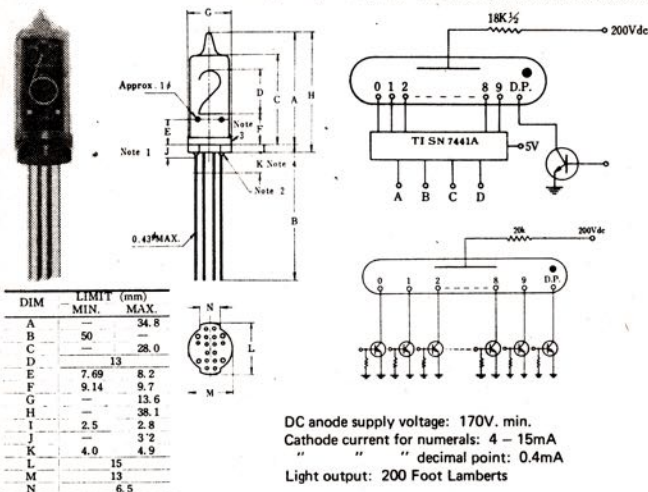
Specifications

Items	Center Frequency (kHz)	3db Band Width (kHz)	Capacity	Impedance at resonance	Frequency Stability Temperature	Frequency Stability Time	Working Voltage
BFB-455A	455 $\pm$ 2	8 $\pm$ 2	550pF $\pm$ 20%	30K Ω Max.	Within $\pm$ 0.4% from 10°C to $\pm$ 80°C	Within 0.5% for 10 years	50VDC



NUMERICAL INDICATOR TUBES (Nixie)

The model B5750 neon indicator is manufactured by Japan Radio Corporation and features a new design to give the largest possible numeral in the standard glass tube. Numerals are over 13mm tall! Both right and left hand decimal points supplied and the circuits can be driven by TTL (see diagram). Ideal for digital clock enthusiasts etc.



Note for 200V supply we suggest cathode resistors are 18K and decimal point 270K

JRC JAPAN RADIO CO. LTD.



1 - 9 10 up
\$3.95 \$3.50

GLOBES

All high quality Philips



6.3V at 0.32A M.B.C.
6.3V at 0.32A M.E.S.
12V at 0.1A M.B.C.
12V at 0.1A M.E.S.
24V at 2.8W M.E.S.
6 or 12 Volt Lilliput Globes

All \$0.18c each

NEONS

Small "pigtail" type neon as used in many projects, striking voltage 90V DC at 600uA - use 270K series resistor for 240V AC operation



1-9 10-99 100 up
.22¢ .16¢ .12¢

VALVES

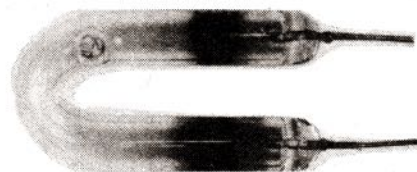
1B3GT	\$1.61	6B8R/A	\$3.67	6J5/GT	\$3.19
1R5	4.38	6BV7	2.70	6J6/A	3.57
IS2	1.61	6BW7	3.86	6J7/GT	4.25
IS5	3.00	6BX6	1.54	6JW8	1.79
IT4	3.51	6BY7	1.54	6KV8	2.31
IU4	3.00	6BZ6	1.54	6L6G/A/B/C	4.35
IU5	3.00	6CA4	1.23	6M5	1.50
1X2/A/B	1.98	6CA7	3.70	6N3	1.36
3S4	3.91	6CB6A	1.54	6N8	1.61
3V4	3.25	6CD6GA	5.78	6S2	2.04
5AS4	1.65	6CG7	1.50	6SA/A	3.27
5U4G/B	1.65	6CG8/A	2.80	6SA7/GT	4.73
		6CH6	5.88	6SJ7/GT	5.12
5Y3GT	1.39	6CJ6	2.80	6SK7/GT	5.12
6A8GT	5.26	6CK6	1.54	6SL7/GT	3.57
6A88	2.41	6CL6	3.47	6SN7GT/A	1.84
6AD8	1.65	6CM5	2.35	6SQ7/GT	3.95
6AH4GT	3.47	6CM7	1.65	6U7G	2.89
6AJ8	2.80	6CQ8	1.70	6U8A	1.70
6AK5	2.80	6CS6	1.46	6U9	2.11
6AK6	3.08	6CW5	1.54	6V4	1.15
6AK8	2.80	6CW7	1.74	6V6	5.29
6AL3	1.69	6CZ5	1.54	6V9	1.84
6AL5	1.31	6DA6	2.41	6W6GT	3.00
6AM5	3.27	6DB5	5.51	6X2	3.43
6AM8/A	3.86	6DC8	2.31	6X4	1.15
6AN7A	1.84	6DJ8	2.74	6X5GT	1.70
6AQ4	3.08	6DL5	2.70	6X9	2.11
6AQ5	1.49	6DQ6A	2.35	6Y9	2.31
6AQ8	2.80	6DR8	2.11	12AD6	3.38
6AR5	3.08	6DS8	3.06		
6AR7GT	3.77	6DT6	1.50	12AN7A	2.11
6AU4GT/A	1.70	6DX8	1.76	12AQ5	1.84
6AU6	1.50	6EA8	1.70	12AT7	1.92
6AV6	1.31	6EB8	1.76	12AU6	1.84
6AW8A	1.80	6EH7	1.70	12AU7A	1.57
6AX4GT	1.74	6EJ7	1.70	12AV6	1.65
6BA6	1.50	6EM5	1.50	12AV7	3.67
6BC8	3.96	6EM7	2.89	12AX7	1.76
6BD7	1.35	6ES6	2.70	12BA6	1.89
6BE6	1.59	6ES8	1.92	12BE6	2.11
6BF5	3.86	6ET6	3.08	12BH7A	1.70
6BH5A	1.54	6EW6	1.57	12BL6	3.19
6BH6	2.89	6FC7	2.22	12BY7A	1.94
6BJ6	3.00	6G8G	4.38	EF86	2.58
6BK8	2.58	6GH8A	4.48		
6BL8	1.63	6GK5	2.15		
6BM8	1.74	6GV8	1.87		
6BN4	2.80	6GW8	1.87		
6BQ5	1.61	6HG/GT	2.67		
6BQ6GTB/6CU6	2.80	6HG5/6AQ5	1.49	QQE03/12	6.50
6BQ7A	1.70	6HG8	2.09	QQE03/20	22.50
6BR5	2.89	6HS8/6BU8	1.59	QQE06/40	24.50
				6146B (YL1370)	6.90

TRANSMITTING VALVES

NEON TUBES AND TRANSFORMERS

Elevan Brand

Distributed by Circuit Components



FLASH TUBE MODEL MFT1210

Design Anode Voltage	: 300
Min Anode Voltage	: 200
Maximum Anode Voltage	: 400
Maximum Energy per Flash	: 40 W.S.
Maximum Input Power (W=W.S.x Flash/Sec.)	: 5W
Maximum Flash Rate at Maximum Input Power	: 100 Flashes/Second
Minimum Trigger Voltage	: 4KV
Dimensions	: 35mm L x 18mm W
Minimum Life	: 20 hours
Material	: Hardglass

MFT1210

\$4.54



TRIGGER TRANSFORMER TR4SK (TR4KM)

Discharge Volts (Primary)	: Maximum 300 Volts
Trigger Capacitor	: .022 VF
Output Volts (Secondary)	: 4KV

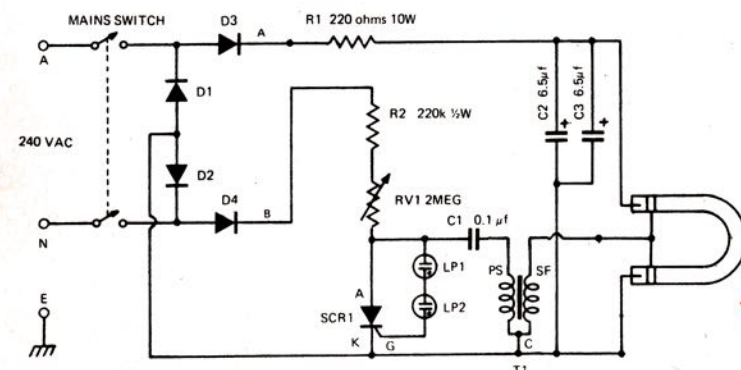
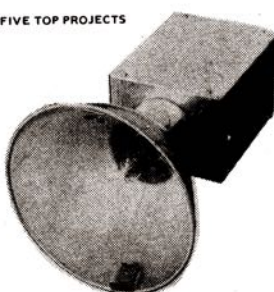
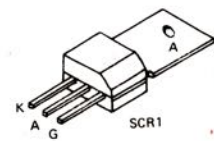
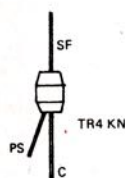
TR4SK

\$3.40

HI-POWER
STROBE

PROJECT
505

TWENTY FIVE TOP PROJECTS



SOLAR CELL KIT (see Review Electronics Australia March 73) intended for the experimenter, highly educational. Contains a selection of photovoltaic and photoconductive cells, actual cells supplied vary from kit to kit since they are factory overruns' cells from famous US manufacturer. The kit therefore represents outstanding value and the cells are a fraction of their normal price. Comprehensive manual with kit outlines experiments etc and working principles etc. Supplied in sturdy plastic case. Typical contents seven cells for only

\$10.95 (P&P 30c)

Some of the experiments described in the comprehensive manual.

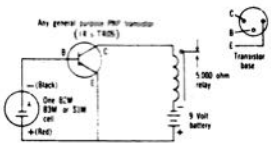


Fig. 9: Transistor current amplifier powered by solar cell

end is black. This experiment illustrates the fact that inexpensive transistors are useful for replacing more sensitive, but expensive components.

Experiment #7

The same transistor amplification system can be used with the cadmium-sulfide cell to trip a 5,000 ohm relay. The circuit is connected as shown in Fig. 10.

In this circuit, the battery current applied

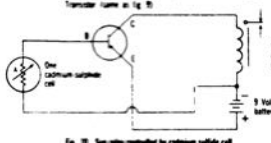


Fig. 10: Sun relay controlled by cadmium sulfide cell

to the transistor for amplification passes through the CS-120 cell. Different light levels vary the cell resistance which changes the amount of current available for amplification. The transistor steps up this current, or amplifies it, which actuates the relay.

Experiment #8

By adding a second transistor to experiment #6, you can build a super-sensitive sun relay as shown in Fig. 11.

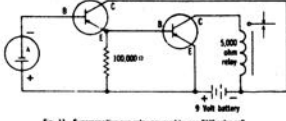
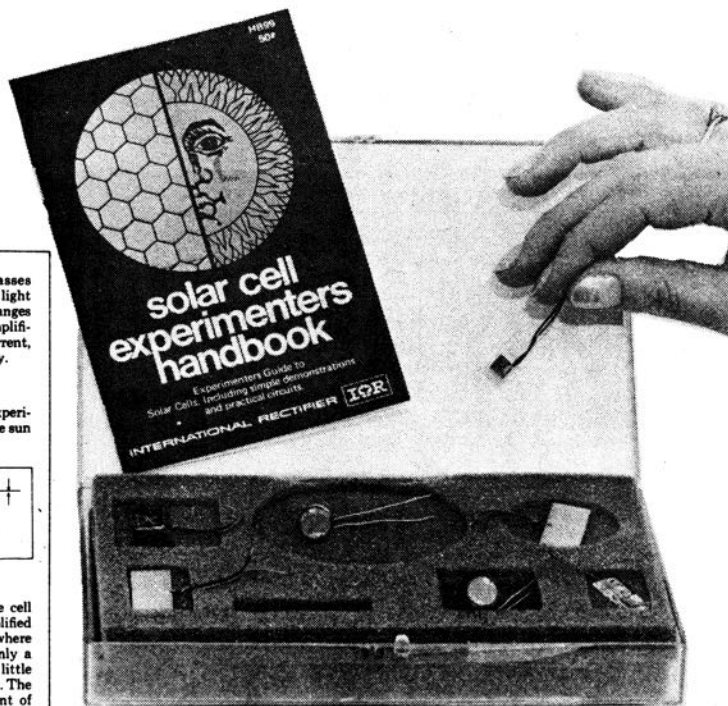


Fig. 11: Super-sensitive sun relay powered by one 51W solar cell

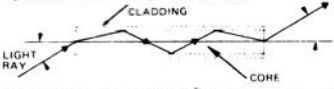
In this circuit, the current from the cell is increased by transistor 1. This amplified current is then passed to transistor 2 where it is again stepped up. As a result, only a tiny voltage which corresponds to very little illumination is sufficient to trip the relay. The sensitivity is determined by adjustment of the relay spring or you may partially cover the cell with cardboard or tape. The circuit will trip the relay on virtually any amount of light and a flashlight at 100 feet will easily



Any source of light will generate a certain amount of heat. Fiber Optics, however, will transmit only the light. Since lighted optical fibers will not carry the heat or electricity, you may be assured that it will provide safe, cool light for anyone to handle.

The principle under which Fiber Optics work is called Total Internal Reflection.

Total Internal Reflections will exist at any smooth interface between two transparent materials having different refractive indexes, such as between glass and air. Contamination such as one fiber touching another, or dirt deposits on the interface, interferes with total internal reflection by absorbing or scattering a fraction of the light. This problem has been solved in the case of Fiber Optics by applying a transparent "cladding" of low refractive index over the higher refractive index of the fiber. This permits highly efficient light transmission through the fiber core.



The amount of light transmitted depends upon (a) the intensity of the light source, (b) the loss characteristics of the cladding and core structures, (c) the length of fiber and the number of fibers per bundle.

LIGHT TRANSMISSION PER FOOT*

FEET	1	2	3	4	5	10	20	30	40	50	100
VALUE	82%	75%	68%	60%	55%	50%	40%	30%	20%	15%	10%

The general performance characteristics of Fiber Optics are listed below. The information is more representative than conclusive because of the wide difference in specimens and techniques in construction.

OPTICAL CHARACTERISTICS

Acceptance angle	70 degrees F
End losses	10% average (depends on end finish)
Line losses	10% per foot exponential
Transmission range	0.4 to 0.9 microns
Bend radius	20 times fiber diameter

PHYSICAL CHARACTERISTICS

Bend radius	Smaller fibers can be lightly knotted without breaking
Density	1.04 grams per cubic cm.

ENVIRONMENTAL CHARACTERISTICS

Temperature (Maximum continuous exposure)	180 degrees F
Minimum temperature	Operates at cryogenic levels. Remains flexible to approximately 40° F.
Heat distortion temperature	212 degrees F at 264 psi.
Moisture absorption	None
Chemical resistance	Unaffected by alkalis, non-oxidizing acids, salt water, photographic solutions, etc. Damaged by acetone and other strong solvents.
Aging	Three years history of dark storage reflects negligible transmission variations.

FIBRE OPTICS KITS Bend light around corners, build light sprays or carry out experiments with this new range of kits. From same US manufacturer, these kits are unbelievable value.

EXPERIMENTERS KIT Contains two large bundles of 15" fibres, pre-formed to a walking stick shape. There must be literally hundreds of them. Plus an 18" jacketed light guide. Also included special eyelet terminations, conical wedges and some tubes for building your own light guides. Manual explains the principles. All you need is a light source.

Value at \$8.50 (P&P 30c)

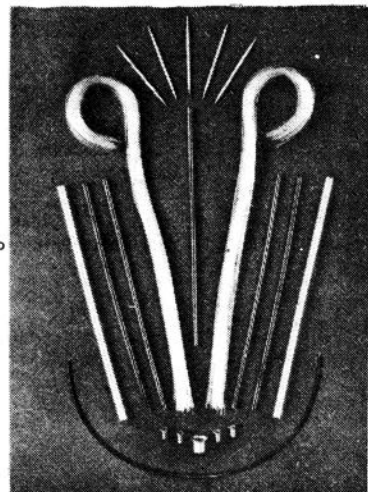
FAN DISPLAY Is a very simple pre-formed fan of free-flowing 20mil fibres. Just add a lamp base to make a real talking point.

\$9.50 (P&P 30c)

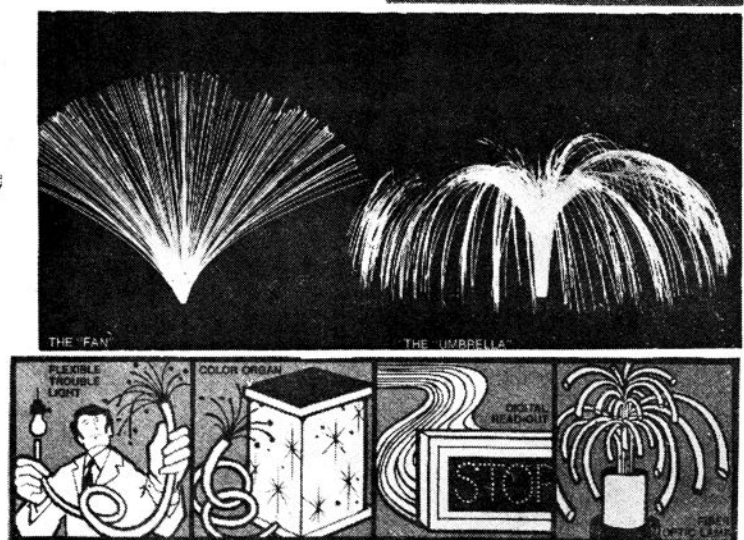
THE UMBRELLA Is a sparkler of 11" fibres fitted to a 3/8" termination. The shops are selling these made up at fantastic prices - at least 10times the \$8.75 we're asking (P&P 30c). Lamp base extra.

UNIVERSAL LAMP BASE Why bother to make your own when we have this beaut black one? Comes complete with low wattage lamp ready to wire and take the fibre optic termination.

\$9.75 (P&P 50c)



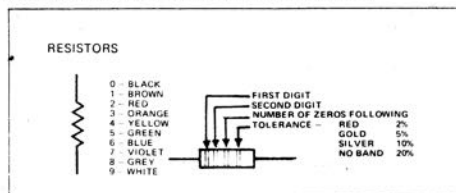
Fiber Optics



RESISTORS



Values are shown in ohms, Kohm (thousands of ohms) and M ohm (millions of ohms). They have no polarity and can be wired in either way round. Values are usually expressed by colour coded bands (see colour code chart below) so it helps to lay resistors same way round to ease checking. Wattage ratings refer to the power that can be dissipated, so a higher wattage than specified does not matter apart from space taken up. Tolerances are usually 20%, silver band denotes 10% gold 5%. Series connections give higher values and dissipations. Parallel connections reduce values (if values are the same just divide by the number of resistors) but multiply the dissipation.



HIGH QUALITY PHILIPS CARBON FILM Imported resistors from Elcoma. All values up to 1Meg are 5% tolerance, above that 10%. 100 up prices are for any mix.

Type	Power	Range	1-99	100 up
CR25	1/4W	1ohm to 10Meg	\$.04c	\$.03c
CR37	1/2W	1ohm to 10Meg	.04c	.03c
CR52	1W	1ohm to 1.5Meg	.07c	.05c

NOTE We carry the full E12 range which consists of the following values and their decades 1.0, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 5.6, 6.8, 8.2.

Special low value I.R.C. wire wound resistors.

1/2 Watt	.22, .47, .75 ohms	.22¢	.16¢
1 Watt	.47, .51, .62, .68, .75, .82, .91 ohms	.30¢	.24¢

RESISTORS POWER

Top quality IRC, P.W. series power resistors

Type	Power	Ohms at 20°C	1-99	100 up
PW5				
	.5, 1, 1.5, 2.2, 3.3, 4.7, 5.6, 6.2, 6.8, 7.5, 8.2, 9.1 ohms		.45¢	.35¢
	10 ohms to 3.3K ohms		.33¢	.25¢
	3.6K to 4.7K ohms		.48¢	.40¢
PW10				
	.1, .5 ohms		.95¢	.90¢
	1 ohm to 9.1 ohms		.80¢	.70¢
	10 ohm to 6.8K ohm		.48¢	.40¢
	7.5K ohm to 12K ohm		.64¢	.56¢
	15K ohm to 20K ohm		.80¢	.70¢

THERMISTORS Are thermally sensitive resistors suitable for many applications including temperature measurement, control and compensation, current surge suppression, power measurement, amplitude control, trigger circuits, measurement of velocity of liquids, gases etc.



Type	Power	Ohms at 20°C	1-99	10 up
R24	3mW	20,000	\$2.15	\$2.05
R53	3mW	5,000	2.65	2.50
A14	60mW	10,000	1.15	1.10

BRISTORS are broad tolerance rod-type thermistors which are ideal for surge suppression and resistance variation compensation of other components in electronic and projection equipment for example. The resistance decreases with rising temperature and so does the temperature coefficient. Thus a rise of about 20°C above room temperature will halve its resistance, but at 250°C an increase of 50° is needed to halve the resistance.

CZ1	.3 Amp	3,380	.48	.40
CZ2	.3 Amp	5,500	.48	.40
CZ3	.2 Amp	1,500	.48	.40
CZ4	.8 Amp	800	.48	.40
CZ6	.45 Amp	3,000	.48	.40
CZ8	.3 Amp	1,600	.48	.40
CZ9	.6 Amp	350	.48	.40
CZ10	.075 Amp	1,100	.48	.40
CZ11	1.5 Amp	140	.48	.40

BATTERIES

Large turnover keeps all our batteries factory fresh — brands are Eveready and National.

No.	Description	Voltage	Price
1015 (UM3D)	"Penlight"	1.5	\$0.15c
1035 (UM2D)		1.5	.20c
1050 (UM1D)		1.5	.25c
216 (006PD)	Trans. Port.	9	.60c
2362	Trans. Port.	9	1.10
2364	Trans. Port.	9	1.60
276P	Trans. Port.	9	1.60
2364	Trans. Port.	9	1.60
2510	Trans. Port.	2x7 1/2	1.80
2512	Trans. Port.	2x9	1.95
2582	Trans. Port.	2x6	2.20
2761	Trans. Port.	9	2.20

HOLDERS & CLIPS



	1-9	10 up
DS35 holds 4 x 1015 penlight cells — as used in most Japanese radios	\$0.45c	\$0.36c
DS33 Battery clip for 216 miniature 9 volt batteries	.15c	.12c
6911/5/2 2 Pin plug for 276P, 2761, 266 etc.	0.10	0.08

POTENTIOMETERS

One again check the dissipation and remember you can either have linear or log. (This tells how the resistance varies with rotation). Linears are for general use whereas log are intended for audio volume use since they allow for the non-linearity of the human ear. The best available, Philips and I.R.C., high quality noise free potentiometers, standard 1/4" shaft supplied complete with nut. Extra reliability justifies the small extra price.

SINGLE GANG STANDARD

Available in both logarithmic (c) and linear (A) curve.

All preferred values 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M 2M	1-9 \$0.50	10 up \$0.40
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SINGLE GANG — SWITCH TYPE

Double pole double throw switch, all preferred values

\$1.10	\$1.00
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DOUBLE GANG STANDARD

Available in both logarithmic and linear

Values 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M	\$1.50	\$1.30
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SLIDER POTS STANDARD

High quality units for "modern look" equipment

Available in both logarithmic and linear

Values 10K 50K 100K 500K	\$1.20	\$1.10
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SLIDER POTS — GANGED

Available in logarithmic and linear

Values 10K 50K 100K 500K	\$2.10	\$1.90
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Knobs to suit? See section on Knobs.

TRIM POTS — Miniature Carbon

Printed circuit mounting — screw driver adjustment. Two types available, vertical or horizontal mounting.

E086 Philips Series 3/8" Diameter

Range 100 220 470 1K 2.2K 4.7K 10K 22K 47K 100K 220K 470K 1M	1-9 \$0.30	10 up \$0.26
E097 Philips Series 3/4" Diameter—values as above	.30	.26

Japanese Replacement Control

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

VC1—5K with switch

VC—4 5K with switch

and 1" knurled shaft

NEWS FLASH... LIGHT DIMMERS



This is "Moonglo" Light Dimmer, created especially for the magic of soft lighting — "Moonglo" light dimmers provide that every need for intimate living, relaxed atmosphere, candlelight cosiness.

FULLY APPROVED

Low cost "Moonglo" light dimmer is a most modern light dimmer; fully fitted with suppression circuitry for radio noise free use and tastefully styled for today's living — modern "Moonglo" is available for architrave or wall mounting and has an attractive gold faced knob. You can expect years of trouble-free service from "Moonglo" and it's fully approved by electrical authorities.

LOTS OF USES

"Moonglo" light dimmers — made for mood lighting — for homes, hotels, restaurants, reception rooms, motels, hospitals, shops — those places where people gather.

500 Watt Dimmer supplied complete with both wall and architrave plates — fully built and tested — ridiculously cheap

\$6.90 (P&P 50c)

CAPACITORS

The important things to remember are values and ratings and occasionally tolerances. Shape is also important if layout has already been decided.

RATINGS Capacitors of a higher voltage rating can be used in circuits specifying lower ratings.

PARALLEL CONNECTION Simply add values — it is a good way to make up the value you want if you cannot wait to buy one.

POLARITY Remember it is very important with electrolytics (unless they are nonpolarised).

FILTERS, VALUES usually are not important for smoothing and reservoir capacitors.

OPEN CIRCUITS Easily checked by placing a substitute across the suspected one. If the trouble goes you know the original is faulty.

"GREEN CAP" PLASTIC FILM

High quality 10% tolerance for p.c. board mounting. Values in μF

Values in μF	1 - 9	10 up
100 volt		
.001 .0015 .0022 .0033 .0039 .0047		
.0056 .0068 .0082 .01 .015 .022	.15	.13
.033 .039 .047 .056	.16	.14
.068 .082 .1 .15 .22	.20	.16
200 volt		
.27 .33 .39 .47	.25	.22
1.0	.36	.32
2.0	.58	.50
3.3	1.40	1.20

CERAMIC

T.H. type 500 volt miniature plate	1 - 9	10 up
1 2.2 3.3 4.7 6.8 10 15 22 33 47		
68PF	.11	.09
T.L. type 60 volt miniature plate		
10C 220 330 470 PF .001 .0022		
.0033 .0047 .01 .022 .033 .047 μF	.11	.09
.1	.16	.14
.22	.20	.18
.47	.34	.30
2 K.V. DISC CERAMIC	.60 ϵ	.50 ϵ

Available in .001 μF and .01 μF
PHILIPS TUBULAR "POLYESTER" CAPACITORS

A fine series of capacitors in three voltage ranges.

Values	160V	400V	630V
	1-9 10 up	1-9 10 up	1-9 10 up
.001, .0012, .0015, .0018, .0022, .0027, .0033, .0039, .0047, .0056, .0068, .0082		12 ϵ 10 ϵ 14 ϵ 12 ϵ	
.01, .012, .015, .018, .022, .027, .033, .039	13 ϵ 12 ϵ 15 ϵ 13 ϵ 17 ϵ 15 ϵ		
.047, .056, .068	15 ϵ 14 ϵ 17 ϵ 15 ϵ 20 ϵ 19 ϵ		
.082, .1, .12, .15, .18	22 ϵ 21 ϵ 24 ϵ 22 ϵ 26 ϵ 24 ϵ		
.22	24 ϵ 22 ϵ 27 ϵ 24 ϵ 33 ϵ 31 ϵ		
.27	32 ϵ 30 ϵ 36 ϵ 33 ϵ 42 ϵ 40 ϵ		
.33	34 ϵ 32 ϵ 38 ϵ 35 ϵ 44 ϵ 42 ϵ		
.39	35 ϵ 33 ϵ 43 ϵ 40 ϵ 50 ϵ 45 ϵ		
.47	36 ϵ 33 ϵ 45 ϵ 40 ϵ 53 ϵ 50 ϵ		
.56	38 ϵ		
.68	42 ϵ		
.82	46 ϵ		
1 μF	50 ϵ		

1 μF 400V A.C. (800V Peak) — for C.D.I. \$1.80

DUCON "STYROSEAL" CAPACITORS
All 630 Volt Rating

33PF, 39, 47, 56, 68, 82, 100, 120, 150, 180, 220, 270, 330, 390, 470PF	1-9 10 up
560PF, 680, 820, 1000 (.001) PF	20 ϵ 16 ϵ

FEED THROUGH CAPACITORS

Philips Ceramic .001 μF (1000 PF) 630V 1-9 10 up 26 ϵ 22 ϵ

CAPACITORS — TRIMMERS

Jabel J50 5—50 PF 26 ϵ ea.

ELMENCO r.f. MICA TRIMMERS Ideal for H.F. and VHF circuits. American made using India Ruby Muscovite mica for the dielectric. 250V DC working and will naturally take RF current

Type	Value	1 - 9	10 up
Type 402	1.5 to 20pF	\$0.34 ϵ	\$0.30 ϵ
Type 404	7 to 60pF	.50 ϵ	.45 ϵ
Type 406	15 to 115pF	.70 ϵ	.60 ϵ

STETNA TRIMMERS

Model	Value	1 - 9	10 up
7S02/N075 Sub Micro 3-9PF			
7S02/N470 Sub Micro 3.5-13PF			
10S06 N750 Micro 6-25PF		\$.40 ϵ	\$.36 ϵ
10S06 N750 Micro 10-40PF			



CAPACITORS — VARIABLE

Roblan RMG3 3 gang 415 PF	\$4.60
RMG2 2 gang 415 PF	\$4.60
10 - 24pF	\$3.60
RMG1 Single Gang 415 PF	\$2.75
50pF	\$2.60
100pF	\$2.75
Transistor radio replacement capacitor Sato type PU2/20Y miniature Mica insulated 60 and 160 PF. Ideal replacement unit.	\$1.50
MSP K2X/39260 (For E.A. & E.T. projects)	\$3.60

SILVER MICA CAPACITORS - 100 VOLT

This new range of high stability, high tolerance (5%) Capacitors are ideal for both audio and R.F. Circuits - The most attractive part is their low cost.

Range LCQ	1 - 9	10 up
4.7, 5.6, 6.8PF	\$.20 ϵ	\$.16 ϵ
27, 33, 47, 56, 68, 82, 100PF	.22 ϵ	.18 ϵ
120PF to 1000PF	.30 ϵ	.26 ϵ
1200, 1500, 1800, 2200, 2700PF	.35 ϵ	.30 ϵ

ELECTROLYTIC CAPACITORS

STANDARD AXIAL LEAD

CAPACITANCE	VOLTAGE	PRICE 1 - 9	10 up	CAPACITANCE	VOLTAGE	PRICE 1 - 9	10 up
.47	63	.15	.35	47	25	.24	.20
1	350	.25	.23	47	63	.26	.22
2.2	63	.16	.14	47	350	.85	.80
3.3	25	.16	.14	100	10	.20	.18
4.7	25	.18	.16	100	25	.25	.22
4.7	63	.20	.16	100	63	.32	.30
4.7	350	.36	.34	100	350	1.20	1.10
4.7	500	.40	.36	220	16	.52	.46
8	500	.52	.49	220	25	.66	.56
10	16	.18	.16	220	63	.72	.62
10	25	.20	.16	470	16	.60	.54
10	63	.21	.18	470	63	.90	.80
16	500	.66	.60	470	16	.70	.60
24	350	.66	.56	1000	16	.72	.62
24	500	.78	.73	1000	25	.90	.80
25	25	.19	.16	1000	35	1.00	.90
25	63	.26	.24	1000	63	1.40	1.20
33	350	.70	.62	2500	16	.95	.90
33	500	.94	.90	2500	25	1.40	1.10
47	16	.20	.16	2500	35	1.50	1.35

RB (PRINTED CIRCUIT TYPES)

CAP	VOLT	1 - 9	10 up	CAP	VOLT	1 - 9	10 up
2.2	25	.14	.12	33	10	.16	.14
4.7	25	.14	.12	33	35	.20	.18
25	25	.16	.14	47	25	.20	.16
				100	16	.20	.16
				100	25	.22	.20
				220	16	.45	.40
				220	25	.55	.50
				330	25	.60	.52
				470	16	.48	.40
				470	25	.60	.50
				640	16	.60	.50

METAL CAN TYPE

CAP	VOLT	1 - 9	10 up	CAP	VOLT	1 - 9	10 up
50 + 50	350	1.50	1.35	1000	100	2.60	2.40
100	200	1.20	1.04	2500	66	2.40	2.20
100	350	1.60	1.40	2500	100	4.90	4.10
250	350	2.20	1.90	4000	75	4.50	3.80
				8000	75	7.75	7.00

BI-POLAR ELECTROLYTIC CONDENSERS

Special non-polarised capacitors designed for use in speaker cross-over networks and circuits involving polarity changes.

RB-P series 50V rating

Value	1 - 9	10 up
2.2 - 4.7, 6.8, 10, 22 μF	\$.30	\$.25
47, 100 μF	.45	.40

PLESSEY TANTALUM "TAG" CAPACITORS

PLESSEY RESIN DIPPED TANTALUM CAPACITORS

High capacity in a small package.

35 Volt rating

.1 μF , .22, .33, .47, 1 μF , 1.5, 2.2, 3.3, 4.7, 6.8 10 μF
Other ratings: 15 μF /16V, 22 μF /16V, 33 μF /10V, 47 μF /6.3V, 100 μF /3V

These capacitors are particularly suitable for mounting on printed circuit boards and find application in both professional and domestic grade electronic equipment. Conventional solid tantalum technology is employed in their manufacture, with tantalum oxide dielectric and sintered anode construction. They are finally dip encapsulated in epoxy resin to give the typical form shown opposite.

Technical Data

Temperature Range

These capacitors are designed for continuous operation at rated voltage from —55°C to +85°C.

Humidity

Series 54 capacitors are capable of performance to H5, as specified in DEF 5011.

Voltage

3-35V currently available.

Capacitance

0.1 μF —100 μF currently available.

Capacitance Tolerance $\pm 20\%$, $\pm 50\%$ —20%

Leakage Current (maximum)

0.05 μA /V or 2 μA whichever is the larger, measured 3 minutes after application of voltage at 20°C with series resistance of 1K

Power Factor 0.2 maximum at 120Hz.

Reverse Voltage

3V and 6V rated units, max. reverse voltage 0.3V

10V-35V rated units, max. reverse voltage 0.5V

PLESSEY Ducon

Semi-Conductors

LINEAR	Case	Description	1 - 9	10 up
AWM1306	A	FM Converter	\$6.20	\$5.80
CA3028A	A	RCA Linear	3.00	2.80
LM301A (UA301A)	A	High Input Operational Amp.	1.40	1.20
LM309	C	5 Volt 1 Amp Regulator	4.30	4.00
LM308N	B	Operational Amp	4.00	3.60
LM381	B	Dual Operational Amp.	5.20	5.00
LM709	A,B	General Purpose Amp.	1.00	.90c
LM741 (UA741)	A	Operational Amp.	1.40	1.30
MC1330P	B	Homodyne IC	3.20	3.00
MC1469R	C	1/2 Amp Voltage Regulator	4.75	4.40
NE555	B	Timer IC	2.45	2.20
NE561B	B	Phase Lock Loop IC	9.56	8.90
TAA300	A	1 Watt Audio Amp	2.90	2.70
TAA521 (Equivalent 709c)				
TAA840	B	AM Radio Tuner	3.20	3.00
TBA221 (Equivalent 741c)				
TBA281 (Equivalent 723c)				
UA703c	A	RF, IF Amp.	1.50	1.30
UA709c (LM709)	A,B	General Purpose Amp.	1.00	.90c
UA723c (LM723)	A	Regulator	1.80	1.60
UA739	B	Dual OP Amp low noise	2.95	2.60
UA741 (Equivalent LM741)				

NOTE Where case outline is shown as two types we will supply whichever is available if you do not select specifically.

CASE OUTLINES
 A Round case (T05)
 B Dual in line
 C TO18 or similar type

DIGITAL INTEGRATED CIRCUITS

I.C.	1 - 9	10 up	I.C.	1 - 9	10 up
SN7400N	\$0.90c	\$0.80c	SN7470N	1.70	1.55
SN7401N	.90c	.80c	SN7472N	1.40	1.20
SN7402N	.90c	.80c	SN7473N	1.50	1.35
SN7403N	.90c	.80c	SN7474N	1.50	1.35
SN7404N	.90c	.80c	SN7475N	1.90	1.72
SN7405N	1.00	.90c	SN7476N	1.50	1.35
SN7406N	.90c	.80c	SN7480N	1.80	1.62
SN7409N	.90c	.80c	SN7482N	1.90	1.80
SN7410N	.90c	.80c	SN7483N	2.45	2.25
SN7413N	1.20	1.00	SN7486N	1.60	1.45
SN7420N	.90c	.80c	SN7490N	1.75	1.60
SN7430N	.90c	.80c	SN7491AN	2.00	1.85
SN7437N	1.80	1.60	SN7492N	1.90	1.70
SN7440N	.90c	.80c	SN7493N	1.90	1.70
SN7441AN	2.60	2.30	SN7495N	2.70	2.50
SN7442N	2.45	2.20	SN7496N	2.50	2.20
SN7447N	3.50	3.10	SN74107N	1.50	1.30
SN7450N	.90c	.80c	SN74121N	1.50	1.30
SN7451N	.90c	.80c	SN74141N	5.00	4.60
SN7453N	.90c	.80c	SN74192N	8.50	8.00
SN7454N	.90c	.80c	SN74193N	8.50	8.00
SN7460N	.90c	.80c			

AMPLIFIER IC'S	STC	TA20C	20 Watt	\$12.50	
		TA25C	25 Watt	17.00	
	Plessey	SL403D	3 Watt	6.10	1-9 10 up

LIGHT DEPENDENT RESISTORS (L.D.R'S)	ORP12	1 - 9	10 up
	ORP60	\$.69	\$.85
		1.52	1.41

LIGHT EMITTING DIODES	1 - 9	10 up
RL209 Small	\$.60	\$.50
RL21 Large with mount	.80	.70

SOLID STATE LED DISPLAYS	1 - 9	10 up
DL707 .3" High	\$3.90	\$3.50
DL62 .6" High	8.90	8.25

OPTO ISOLATOR	1 - 9	10 up
IL-1	\$3.75	\$3.50

SILICON CONTROL RECTIFIERS (SCRs)

See data on page 36

	1 - 9	10 up
BRY39	1.60	1.50
C103B	1.76	1.56
C106Y1	1.60	1.50
C106DI	2.80	2.60
C122D	3.40	3.20
C122E	3.60	3.40

DIACS AND TRIGGER DIODES

	1 - 9	10 up
BR100	1.60	1.50
V413	1.20	1.10
ST4	.98	.90

TRIACS

	1 - 9	10 up
SC148D (MAC11)	3.20	3.00
SC141D	2.95	2.70

SPECIAL R.F. POWER TRANSISTORS

	1 - 9	10 up
2N5589 7 Watt	\$6.50	\$6.00
2N5590 15 Watt	7.75	7.45
2N5591 30 Watt	9.85	9.35
Note Special price on set of three above	\$22.50	

ZENER DIODES

BZX79 (BZY88, BZY94) 400 MW ZENERS	1 - 9	10 up
Range 3.3 volts to 30 volts (numerals indicate voltage)		
BZX79/C3V3, C3V6, C3V9, C4V3, C4V7, C5V1, C5V6, C6V2	\$.48c	\$.45c
BZX79/C6V8, C7V5, C8V2, C9V1, C10, C11, C12, C13, C15, C16, C18, C20, C22, C24, C27, C30	.40c	.34c

BZX70 (BZY95) 2.5 watt Zeners

Range 5.6V to 75V	1 - 9	10 up
BZX70 C5V6, C6V2, C6V8, C7V5, C8V2, C9V1	\$1.40	\$1.30
	2.00	1.90
C10, C11, C12, C13, C15, C16, C18, C20, C22, C24, C27, C30, C33, C36, C39, C43, C47, C51, C56, C62, C68, C75	.75c	.70c

BZY93 15 WATT HEAVY DUTY STUD MOUNTING

Range 7.1 to 75 volts as follows	1 - 9	10 up
BZY93, C7V1, C8V2, C9V1, C10, C11, C12, C23, C15, C16, C18, C20, C22, C24, C27, C30, C75	\$2.20	\$2.09

SILICON BRIDGE RECTIFIERS

High quality bridge assemblies give maximum rating and reliability for minimum cost.

Type	Current	P.I.V.	1 - 9	10 up
MB05	1.8A	50	\$1.70	\$1.58
MB1	1.8A	100	1.80	1.67
MB2	1.8A	200	1.90	1.74
MB3	1.8A	300	2.05	1.93
MB4	1.8A	400	2.20	1.95
MB6	1.8A	600	2.69	2.59
MB8	1.8A	800	3.56	3.32
MB10	1.8A	1000	4.50	4.20
PA40	8A	400	5.20	4.95
PA60	8A	600	6.00	5.70
PB40	25A	400	6.80	6.46

SIGNAL DIODES

	If	Vr	1 - 9	10 up
AA119 Germanium, small signal	35MA	30V	\$0.38c	\$0.35c
BA100 Silicon, small signal	90MA	60V	.36c	.32c
BA102 Variable capacitance	-	20V	.65c	.52c
BA114 Bias stabilizing	20MA	800MV	.45c	.40c
OA90 Germanium, small signal	8MA	20V	.36c	.35c
OA91 Germanium, small signal	50MA	90V	.38c	.35c
OA95 Germanium, small signal	50MA	90V	.42c	.40c
OA200 Silicon, small signal	160MA	50V	.45c	.42c
OA202 Silicon, small signal	160MA	150V	.46c	.42c
IN4148 (IN914A) Silicon, switching	75MA	75V	.26c	.24c

SILICON DIODES From : G. E. Phillips STC etc.

Type	Current	P.I.V.	1 - 9	10 up
A15A	5A	100	\$1.50	\$1.40
A15D (IN5625)	5A	400	1.70	1.60
EM401 (A14A)	1A	100	.25c	.22c
EM402 (IN5059)	1A	200	.26c	.24c
EM404 (IN5060)	1A	400	.28c	.26c
EM406 (IN5061)	1A	600	.40c	.35c
EM408 (IN5062)	1A	800	.45c	.40c
EM410 (A14P)	1A	1000	.48c	.40c
BYX21L/200	25A	200	1.35	1.25
BYX21L/200R	25A	200	1.35	1.25

TRANSISTORS

	1 - 9	10 up		1 - 9	10 up
AC107	\$1.00	\$.80	ADZ11	4.70	4.50
AC125	.89	.75	ADZ12	4.90	4.60
AC126	1.00	.80	AF114N (AF124)	1.89	1.79
AC127	1.00	.80	AF115N (AF125)	1.89	1.79
AC127/128	2.40	2.00	AF116N	1.50	1.40
AC128	1.20	1.10	AF117N	1.50	1.40
AC132	1.20	1.10	AF118N	2.89	2.75
AC172	1.20	1.10	ASZ15 (OC28)	3.20	3.00
AC187	1.20	1.10	ASZ16 (OC29)	3.40	3.20
AC187/188	2.40	2.20	ASZ17 (OC35)	3.45	3.30
AC188	1.20	1.10	ASZ18 (OC36)	3.50	3.40
AD149 (OC26)	2.40	2.20	ASZ21	1.85	1.65
AD161/162	3.40	3.20	AS300	.92	.85
ADY26	6.90	6.70	AS301	.92	.85

AS302	.92	.80	BF194	.50	.45	TT801	1.00	.90
AY8140	1.70	1.55	BF195	.50	.45	TT1112	.65	.60
AY9140	1.70	1.55	BF200	1.30	1.10	2N301	2.80	2.60
AY8171	1.80	1.60	BF336	1.50	1.40	2N301A	3.40	3.20
AY9171	1.80	1.60	BF337	1.62	1.50	2N706A	.90	.80
AY8149	2.20	1.90	BF338	1.70	1.50	2N2646 (MU10)	1.40	1.20
AY9149	2.20	2.00	BFW10 (2N5459)	1.50	1.20	2N2647 (MU10)	1.40	1.20
BC107	.35	.30	BFW11	1.45	1.30	2N3053 (BFY50)	.90	.80
BC108	.35	.30	BFW61	1.30	1.20	2N3054 (40250)	1.80	1.70
BC108B	.45	.40	BFY50 (2N3053)	.90	.80	2N3055 (BDY20)	1.60	1.45
BC109	.35	.32	BFY51	.90	.80	2N3564	.55	.55
BC109C	.45	.40	BFY52	.95	.85	2N3566	.65	.60
BC147 (BC107)	.45	.40	D13T1 (MPU131)	1.50	1.40	2N3567	.89	.70
BC148	.40	.35	MJE2955	3.20	3.00	2N3588	.80	.70
BC149 (BC109)	.45	.42	MJE3055	2.60	2.40	2N3589	.65	.60
BC157 (BC177)	.45	.40	MPF102	1.50	1.40	2N3638	.45	.40
BC158 (BC178)	.45	.40	MPF103 (2N5457)	1.70	1.60	2N3638A	.55	.50
BC159 (BC179)	.49	.45	MPF104 (2N5458)	1.65	1.50	2N3640	.60	.50
BC186	.70	.65	MPF105 (2N5459)	1.70	\$1.60	2N3641	.45	.40
BCY70	.85	.80	MPF106 (2N5485)	1.90	1.80	2N3642	.45	.40
BCY71	.86	.82	MPF121	1.60	1.50	2N3643	.55	.50
BCY72	.80	.75	OC26 (AD149)	2.40	2.20	2N3644	.45	.40
BD137	1.70	1.50	OC28 (see ASZ15)			2N3645	.55	.50
BD137/138	3.50	3.20	OC44N	1.80	1.70	2N3819 (BFW10)	1.50	1.20
BD139	1.80	1.60	OC45N	1.90	1.80	2N4250	.55	.50
BD139/140	3.60	3.20	OC71	1.95	1.85	2N4258	.55	.50
BDY20/2N3055	1.60	1.45	OC72	2.30	2.10	2N4360	1.20	1.40
BF115	.70	.66	OC74N	1.00	.80	2N5245 (TIS88)	1.55	1.40
BF167	.65	.60	OC75N	1.00	.80	2N5457 (MPF103)		
BF173	.80	.75	SE1001	.95	.85	2N5458 (MPF104)		
BF177 (use BF336)			SE1010	1.50	1.30	2N5459 (MPF105)		
BF178 (use BF336)			SE4002	.85	.80	40250 (2N3054)	1.80	1.70
BF179 (use BF337)			TIS88 (2N5245)	1.55	1.40	40408 (2N2102)	2.50	2.00
BF180	1.20	1.10	TT787	1.20	1.10	40409	3.20	3.00
BF184	.65	.60	TT798	1.20	1.10	40410	3.20	3.00
BF185	.65	.60	TT800	1.00	.90			

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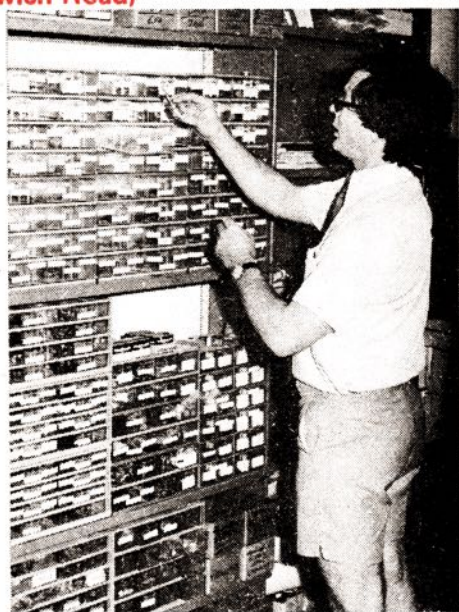
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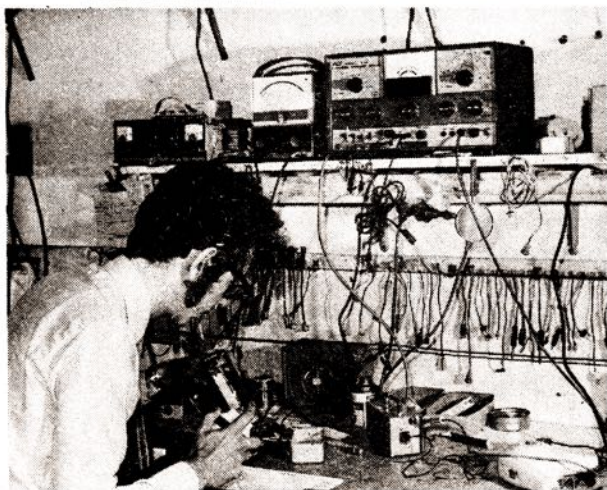
Part of the self-service section



Junior staff member checks through the potentiometer stock



Dick himself helps a customer in the tape and cassette section.



Completed project is put to the test in our service section.



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